

# Effect of the In-Flight Meal Service Quality on the Customer Value and Loyalty

JooEun Lee<sup>1</sup> and SeonHee Ko<sup>2\*</sup>

<sup>1</sup>Department of Food and Nutrition, Seowon University, Korea; jody88@hanmail.net

<sup>2</sup>Department of Airline Service, Seowon University, Korea; sunny\_ko@hanmail.net2

## Abstract

**Background/Objectives:** The purpose of this study was to examine the relationship among in-flight meal service quality, customer value and loyalty. To accomplish this, a questionnaire was developed based on previous studies. **Methods/Statistical analysis:** A convenience sample of 400 respondents was surveyed and a total of 368 usable questionnaires were analyzed. SPSS 21.0 was used as statistical tool for data analysis. Descriptive analysis was conducted to examine the demographic characteristics of the participants. And to test the constructive validation of the instrument for evaluation, factor analysis was carried out. And multiple regression analysis was performed to know the impact among variables. **Findings:** The average of in-flight meal service quality score was 3.27/5.00 and in-flight meal service quality was highest with service factor of 3.30, followed by sanitation factor with 3.27 and food factor with 3.25. Meanwhile, the average of customer value score was 3.14 and loyalty was 3.28 respectively. Furthermore, there was a significantly positive correlation among food, service, sanitation, customer value and loyalty (\*\* $p < 0.01$ , \* $p < 0.05$ ). Specifically, service factor and the sanitation factor ( $p < 0.01$ ) showed a significant high correlation ( $p < 0.01$ ) while food factor and customer value showed the lowest correlation ( $p < 0.05$ ). According to regression analysis, sanitation ( $\beta = 0.555$ ,  $p < 0.001$ ) and service factor ( $\beta = 0.161$ ,  $p < 0.001$ ) among in-flight meal service quality have positive effect on customer value while food factor has no effect ( $R^2 = 0.41$ ,  $p < 0.001$ ). Furthermore, influences of in-flight service quality on loyalty showed significantly positive effects in food ( $\beta = 0.160$ ,  $p < 0.01$ ), service ( $\beta = 0.315$ ,  $p < 0.001$ ) and sanitation ( $\beta = 0.385$ ,  $p < 0.001$ ) factors. Regarding the degrees of influences on customer value and loyalty, sanitation showed the highest effects. **Application/Improvements:** It is necessary for an airline to continuously understand customers' needs for supplementary services and hygienic management for in-flight meal, not to mention the quality of in-flight service.

**Keywords:** Customer Value, In-Flight Meal Service Quality, Loyalty, Sanitation

## 1. Introduction

Korean air transport industry had been dominated by two major airlines - Korean Air Lines (KAL) and Asiana Airlines- until 2005, when Hansung Airlines (currently, T'way Airlines), which is a Low Cost Carrier (LCC), entered the air transport market. It was the beginning of infinite competition in the Korean air transport industry. Since then, competition among the airlines to attract customers has been more severe and each airline is making the utmost effort to secure loyal customers through various customer marketing programs.

Service quality is defined as subjective judgment or attitude related to the superiority of service<sup>1</sup> and a company with higher service quality can gain more positive fame and save cost necessary to lure new customers<sup>2</sup>. Air service is characterized with a procedure of multiple steps until service completion: in order, it includes booking/ticketing service; pre-boarding service from the ground to boarding; in-flight service; and delivering luggage after landing. Of the service steps, in-flight service is one during which the duration of contact with passengers is the longest and where differentiated service can be provided<sup>3</sup>. In particular, in-flight meal service takes the longest time

\*Author for correspondence

of in-flight service and flight attendants spend most of their time on providing in-flight meal service. For long-haul routes, in-flight meal service is generally provided in the order of aperitif service, the 1st meal service, refreshment drink, and the 2<sup>nd</sup> meal service. During meal service, bread, wine, coffee, tea and so on are served. Most of in-flight meal used to consist of western foods, but as the boarding rate of Korean nationals gets higher and Korean foods get more positive response all over the world, Korean airlines are developing special Korea food menu. In general, economic class is served with one tray of foods and the first and second class are provided with sequential food service<sup>4</sup>.

In-flight meal is made on the ground and served to passengers in flight, which is distinctive from a general restaurant service. Since in-flight foods are served to customers a considerable time after they are prepared and cooked in large quantity, carelessness in any of the processes can have a critical impact on the taste and freshness of food<sup>5</sup>. Moreover, since in-flight meal is a decisive factor that has impact on passengers' judgement on the service quality of an airline, careful attention is required from the selection of menu to food management<sup>4</sup>. Furthermore, it is the overriding factor that has the most impact on customers in choosing airline to use, so the competition of airlines for in-flight service focuses on in-flight meal service<sup>6</sup>.

Kwak and Park<sup>7</sup> examined the expectation and awareness of in-flight meal service quality, which was measured with a total of 14 items, and found out 5 factors that determine the service quality: overall food quality, diversity of menu, cleanness, interest, and information offering. According to the results, customers had high expectation of cleanness and were aware of cleanness the most and it was followed by food quality, interest, diversity of menu, and information offering in the order<sup>8</sup>. Measured in-flight meal service quality with 20 items and found out a total of 4 influential factors through exploratory factor analysis: food, flight attendant service, cleanness, and reliability. The survey with the passengers who used both domestic and overseas airlines showed that the higher perceived performance of taste and quality of food, amount, and diversity of menu was, the more passengers were satisfied with in-flight meal. In addition, the cleaner they were aware that food itself, tableware, dinning suppliers and flight attendant uniform were, the more passengers were satisfied with in-flight meal service<sup>9</sup>. Measured in-flight meal service quality perceived by Chinese students

studying in Korea and found out the factors of the service: food, service, and cleanness. According to the results of the study, it was empirically demonstrated that food and service had impact on the perceived value of customers while cleanness did not. In addition, it was found that the higher they were aware of each of service quality dimensions, the more they were satisfied with in-flight meal service and the stronger they had behavior intention. These results emphasize the importance of service quality.

Despite the importance of in-flight meal service, most of studies that have been domestically conducted on air service mainly focus on the overall service quality of an airline and only some studies paid limited attention to in-flight meal service: difference between expectation and awareness<sup>7</sup>, attributes of in-flight meal<sup>5,10</sup> and effect relationship with satisfaction<sup>3,7,8</sup>. Because customer value is considered as an important factor affecting the evaluation of service and repurchase intention<sup>11</sup>, it has been studied as outcome variable for service quality in various contexts<sup>9</sup> is the only study that used it as outcome variable for in-flight meal service quality. In this respect, the present study, to keep pace with recent demand of studying in-flight meal service quality and when interest in healthy and wellbeing increases, and to overcome the limitation that<sup>9</sup> study that looked into only the in-flight meal service of Korea-China route, the present study carried out an empirical study with the inbound passengers using middle and long-haul routes in order to confirm the impact of in-flight meal service quality on customer value and loyalty.

Customer satisfaction and service quality are considered as critical issues in most service industries<sup>12</sup>. With the findings, it is expected that they can provide the theoretical basic data for improving in-flight meal service quality and practical implications for air transport industry to consider in setting up marketing strategy of customer in-flight meal service in the era of infinite competition.

## 2. Methods

### 2.1. Research Subjects and Duration

This study surveyed inbound locals who returned to Incheon International Airport from overseas flight. The preliminary survey with questionnaires was conducted on 4 passengers with experience of middle or long-haul

routes from December the 17<sup>th</sup> through the 20<sup>th</sup> 2014. Reliability and validity of the questions were tested. The primary survey was carried out for two days from January the 16<sup>th</sup> and 17<sup>th</sup> 2015. To increase the reliability of the survey, small gifts were provided to the respondents. A total of 400 questionnaires (100%) were distributed and 396 (99%) were collected. After excluding 28(7%) with missing values, a total of 368 (92%) were finally used for data analysis.

## 2.2. Survey Contents and Method

The questionnaire used for this study consists of 3 sections: in-flight meal service quality, customer value and loyalty. The questions for in-flight meal service quality were designed based on the questions used in the precedent studies<sup>1-3,6-9</sup>. They were recomposed to fit the circumstances of air service, considering the distinct characteristics of in-flight meal service and revised through in-depth interview with 2 professors who had served as flight attendant in an airline for more than 15 years and specialists in aircraft cabin service. Quality is a multidimensional phenomenon<sup>13</sup>. Of the questions of SERVQUAL<sup>1</sup>, which measures service quality, those not related to in-flight meal service were excluded; the questions related to the service of a worker were changed with those related to in-flight meal service. As a result, a total of 18 questions were designed to measure in-flight meal service. And they were divided into 3 categories (factors) by factor analysis and named "food", "service" and "cleanness" factor, respectively. To measure customer value, 4 questions were designed from PERceived VALue scale (PERVAL) developed by<sup>14,15</sup>: benefit better than cost to pay, quality better for fare, value better than other airlines and wise choice of airline. Loyalty was measured with 3 questions designed on the basis of the study of<sup>16,10</sup>: intention to recommend, positive word-of-mouth, and re-use. All the questions were measured on Likert 5-point scale. Internal consistency reliability was calculated to see consistency among questions and it turned out that Cronbach's  $\alpha$  values of the questions for in-flight meal service are food (0.867), service (0.932), hygiene (cleanness) (0.904); customer value (0.798); and loyalty (0.860).

## 2.3. Data Analysis

SPSS 21.0 was used as statistical tool for data analysis. First of all, descriptive analysis was conducted to examine

the demographic characteristics of the participants. To verify the internal consistency of the measurement scales used in this study, reliability analysis was conducted using Cronbach's alpha. And to test the constructive validation of the instrument for evaluation, factor analysis was carried out. Varimax rotation was used as factor rotation method. And multiple regression analysis was performed to know the impact of independent variable (in-flight meal quality) upon dependent variables (customer value and loyalty).

## 3. Results

### 3.1 General Characteristics

Table 1 shows the demographic characteristics of the respondents. Of the total respondents, 212 (57.6%) are female and 156 (42.2%) are male. For marital status, the married are 244 (66.3%) and the singles are 124 (33.7%), which is larger. By age, the respondents in their 40s are 168 (45.7%), which is the most. And Almost half (47.8%) of total respondents are housewives by occupation.

**Table 1.** General characteristics

		Frequency	Percentage (%)
Gender	Female	212	57.6
	Male	156	42.4
Marriage	Married	244	66.3
	Single	124	33.7
Age	29 less	92	25.0
	30~39 less	88	23.9
	40~49 less	168	45.7
	50 and over	20	5.4
Occupation	Employee	48	13.0
	Public Official	12	3.3
	Student	64	17.4
	Private Business	12	3.3
	Professional	12	3.3
	Housewife	176	47.8
	Other	44	12.0
Education	High School Graduate	96	26.1
	Community College Graduate	104	28.3
	University Graduate or higher	168	45.7

Use of airline	A airline	178	48.4
	K airline	190	51.6
Frequency of airline use (within previous 1 year)	3 less	272	73.9
	3~5 less	68	18.5
	5~10 less	12	3.3
	10 and more	16	4.3
Total		368	100

### 3.2 Evaluation of In-Flight Meal Service Quality, Customer Value and Loyalty

Table 2 shows the respondents' awareness of in-flight meal service quality, customer value, and customer loyalty, which were measured in this study. The average mean of 18 attributes of in-flight meal service quality was

3.27 out of 5 (perfect score); customer value was 3.14; and customer loyalty was 3.28. By attribute of in-flight meal service quality, 'meal proper temperature' received the highest score among the attributes of food factor and 'a variety of non-alcoholic drinks' (3.11) was the lowest. By attribute of service factor, 'polite behavior' of flight attendants obtained the highest score of 3.39 while rapid problem solving related in-flight meal was the lowest (3.18). In cleanness, 'neat appearance' of flight attendants acquired evaluation (3.33) while 'clean utensils' had the lowest score of 3.21. In customer value, 'good value compared to other airlines' received the highest score (3.27) and 'Intend to repurchase' had the highest score (3.32) among the attributes of customer loyalty

**Table 2.** Inflight meal service quality, customer value, loyalty

Category		Item	Mean±SD	Corrected item-total correlation	Cronbach's $\alpha$ if item deleted
Inflight meal quality	Meal	Nutritional balanced diet	3.38±0.65	0.710	0.839
		Meal proper temperature	3.41±0.67	0.692	0.841
		Sufficient amount of food	3.22±0.69	0.746	0.832
		A variety of non-alcoholic drinks	3.13±0.92	0.566	0.871
		Beverages temperature	3.21±0.74	0.718	0.835
		Food flavors	3.29±0.73	0.618	0.853
		Liquor selection diversity	3.11±0.92	0.569	0.871
	Service	Rapid problem solving related in-flight meal	3.18±0.82	0.739	0.887
		Cooking information of flight attendants	3.34±0.81	0.840	0.871
		Polite behavior	3.39±0.88	0.685	0.895
		Rapid meal delivery	3.33±0.85	0.701	0.894
		Meal-related special needs	3.27±0.87	0.692	0.894
		Well-trained and experienced crew	3.33±0.75	0.777	0.881
	Clean	Neat appearance	3.33±0.78	0.787	0.951
		Freshness of color and flavor	3.32±0.65	0.661	0.952
		Clean attire of flight attendants	3.26±0.82	0.650	0.952
		Clean utensils	3.21±0.65	0.602	0.953
		Hygiene and cleanliness of in-flight meal	3.23±0.79	0.796	0.951
	Subtotal	3.27±0.77			
Customer value	Benefit compared to the cost	3.12±0.66	0.675	0.952	
	Superior quality compared to the airfare	3.12±0.62	0.705	0.952	
	Good value compared to other airlines	3.27±0.65	0.775	0.951	
	Smart choice when it comes to choosing airlines	3.07±0.62	0.675	0.952	
	Subtotal	3.14±0.63			
Customer loyalty	Intend to recommend	3.26±0.77	0.637	0.952	
	Positive word of mouth	3.28±0.82	0.690	0.952	
	Intend to repurchase	3.32±0.87	0.485	0.954	
	Subtotal	3.28±0.82			

### 3.3 Impact Analysis of In-Flight Meal Service Quality on Customer Value and Loyalty

Table 3 shows the results of correlation analysis among those variables. Each factor of in-flight meal service quality (food, service and cleanness) turned out to be significantly correlated with customer value and loyalty ( $p < 0.01, p < 0.05$ ). The correlation coefficient between 'service' and 'cleanness' was the highest ( $r = 0.763$ ) while that between 'food' and 'customer value' was the lowest ( $0.105$ ). To examine the impact of in-flight meal service quality on customer value and loyalty, multiple regression analysis was carried out and the results turned out as seen in Table 4. The explanatory power ( $R^2$ ) of in-flight meal service quality for customer value was 41% ( $p < 0.001$ ); by factor, cleanness ( $\beta = 0.555, p < 0.001$ ); and service ( $\beta = 0.161, p < 0.001$ ) in the order. It was proved that 'food' didn't have impact on customer value. The explanatory power ( $R^2$ ) of in-flight meal service quality for customer loyalty was 33% ( $p < 0.001$ ); by factor, cleanness ( $\beta = 0.385, p < 0.001$ ), service ( $\beta = 0.315, p < 0.001$ ) and food ( $\beta = 0.160, p < 0.01$ ) in the order.

**Table 3.** Correlation analysis

Item	Meal	Service	Clean	Customer value	Loyalty
Meal	1				
Service	.528**	1			
Clean	.598**	.763**	1		
Customer value	.105*	.169**	.251**	1	
Loyalty	.237**	.524**	.530**	.232**	1

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

## 4. Discussion

The average mean of 18 attributes of in-flight meal service was 3.27, which means the respondents are aware of them more than average. However, this figure is lower<sup>8</sup> that studied on the international passengers using two domestic airlines and 4 foreign airlines. In this study, the respondents were aware that in-flight meal was served at a proper temperature and the flight attendants were polite when providing in-flight meal service. In addition, the average mean of customer value (3.14) and customer loyalty (3.30) were slightly above 3, which indicates that the respondents were aware they were normal. The study<sup>7</sup> that

examined the relationship between in-flight meal service quality and customer satisfaction showed that cleanness (3.94) was evaluated most positively while information offering (2.76) of flight attendant was evaluated least positively. According to the study of<sup>17</sup> that examined the expectation and awareness of in-flight meal service quality, male passengers evaluated cleanness (4.35) most highly while female passengers evaluated food (3.02) least positively. Those results are somewhat different from the findings in this study.

**Table 4.** Regression analysis

	Content	Un-standardized B	Standardized $\beta$	t value	P-value
Customer value	(Constant)	.981		5.697	.000
	Meal	.085	.071	1.413	.159
	Service	.149	.161	2.582	.010
	Clean	.620	.555	8.370	.000
F value=86.368( $p=0.000$ ) $R^2=0.416$					
Loyalty	(Constant)	1.456		7.430	.000
	Meal	.204	.160	2.971	.003
	Service	.310	.315	4.711	.000
	Clean	.458	.385	5.437	.000
F value=60.155( $p=0.000$ ) $R^2=0.331$					

In this study, it turned out that cleanness, among three factors of in-flight meal service quality, had the most impact on customer value and customer loyalty. Likewise<sup>7</sup> and the study of wellbeing of in-flight meal service quality<sup>18</sup> also found that the hygiene of flight attendants and food had a significant impact on customer loyalty. It indicates that an effort should be made to improve cleanness in order to enhance customer value and loyalty.

## 5. Summary and Conclusion

The present study intended to evaluate in-flight meal service quality and examine its impact on customer value and loyalty for the final purpose of providing theoretical and practical implications to elevate the competitiveness of airline in-flight meal. To do so, a survey was conducted with 368 inbound Korean nationals using airlines. The average mean of the overall in-flight meal service quality was 3.27 out of 5: by factor, food (3.25), service (3.30), and cleanness (3.27). The average mean of customer value was 3.14 and that of loyalty was 3.30. The correlation between

in-flight meal service quality and customer value and loyalty showed that all the factors of in-flight meal service quality (food, service, and cleanness) were positively correlated with customer value and loyalty at statistically significant level ( $P < 0.01, P < 0.05$ ). Multiple regression analysis was conducted to know the impact of in-flight meal service quality upon customer value and loyalty and the results showed that cleanness, among the factors of in-flight meal service quality, had the most impact on customer value and loyalty.

With the findings of this study, it is known that cleanness, among the factors of in-flight meal service quality, is the most important factor for customer value and loyalty and service factor also have some influence over them. However, food does not affect customer value, but loyalty. It indicates that additional services such as freshness of food ingredients, hygiene of tableware, neat and tidy appearance and dress of service attendants, the attitude of service attendants among the attributes of service quality related to in-flight meal can provide customers with an important value to their selection of an airline as well as improve loyalty, which is connected to repurchase intention and word-of-mouth (with powerful marketing effect).

Therefore, it seems very necessary for an airline to continuously understand customers' needs for supplementary services and hygienic management for in-flight meal, not to mention the quality of in-flight, and prepare for a plan to improve customer value and loyalty in order to differentiate itself from other competitors in terms of service offerings. In particular, it is needed to precisely diagnose the current status of the hygiene of in-flight meal service and flight attendants' awareness of hygienic in-flight meal service to enhance the factors related to the cleanness of in-flight meal. And thus, additional studies should be followed on this.

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