

Review

The influence of airline cabin service satisfaction on ethnic group travelers

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The rapid global economy and mushrooming aviation transportation had unleashed a soaring number of air travelers worldwide. To stay competitive, airline operators competed for cheaper prices against greater service. A global level of service from an aggressive airline now featured ethnic group differences and cultural diversifications. This research focused on C airlines, profiling its customers into four ethnic groups: Chinese, Caucasian, Japanese, and Korean. Six air travel service questions on a poll sheet surveying 439 passengers led to varying satisfactions among different ethnic groups. The poll findings that yielded the causes behind the worst air travel services included uncomfortable seating and unfavorable catering. The easiest-to-please group was Caucasian, followed by Korean, Chinese, and Japanese trailing a distant hardest-to-please.

Key words: Service satisfaction, cabin, ethnic groups.

INTRODUCTION

The number of international air travelers had substantially increased, not only in commercial travel, but also in leisure travel. To attract more passengers, airlines now provided more frequency routes and enhanced flight services, resulting in preferable competitiveness in the air travel industry.

Globalization had prompted increased complexity in the demands of international ethnic group travelers, population distribution, and had aggravated airline difficulties to provide satisfactory cabin service. To maintain competitiveness and consolidate market shares, airline operators competed for cheaper costs against better services. The key to achieve ultimate service satisfaction was to understand what customers really need.

The value-added service level from an aggressive airline featured ethnic group differences and cultural diversifications. Previous studies had reported numerous factors that affected airline service quality or satisfaction.

Researchers had recognized flight safety (Rhoades and Waguespack, 2000a), on time departure (Adler et al., 2005), reasonable prices (Ippolito, 1981; Kanafani and Ghobrial, 1995; Adler et al., 2005), flight catering services (Fourie and Lubbe, 2006), baggage service (White, 1994), handling customer complaints, and transfer

convenience (Prousaloglou and Koppelman, 1995; Feng and Jeng, 2005) as decisive factors. Cabin comfort and cleanliness and friendly crew members were also important factors (Park et al., 2004).

Socioeconomic characteristics such as age, gender, education, and marital status also significantly affect the perception of service quality and service satisfaction. Furthermore, the behavior and interaction between the passengers and crew had also been discussed (Yang and Chang, 2012; Wong et al., 2010; Park et al., 2004).

However, literature regarding the effect of ethnic groups in relation to service satisfaction had rarely been discussed, even though different ethnic groups or cultural backgrounds could be a potential determinant of service satisfaction. Airlines must design cabin services to be more ethnically oriented and more suitable to customer demands to attain higher satisfaction, which in turn achieved higher competitiveness and market acceptance in the airline industry.

LITERATURE REVIEW

Customer satisfaction

Airline service researches had mainly focused on

customer satisfaction and service quality had used a similar concept to the expectation-disconfirmation model. Cardozo (1965) investigated the relevance between expectation and customer effort, showing that there had always been higher expectations for products or services from customers when more effort or money was spent to acquire it. The product or service that did not meet customer expectations results in the expectation-disconfirmation phenomenon, which led to lower customer satisfaction.

Olshavsky and Miller (1972) analyzed the product performance between customer expectancy and actuality, and showed more dissatisfaction results from higher expectations; however, customer disconfirmation showed lower expectation with the same product. Anderson (1973) investigated product performance from the expectation-disconfirmation model and concluded that customers who expressed greater discrepancy between expected performance and actual performance were less satisfied than those with lower expectations. Oliver (1981) examined the relationship between satisfaction and expectation based on the attitude model. If product performance after purchase was inconsistent with expectations prior to purchase, a disconfirmation phenomenon would result in dissatisfaction.

Another model investigated satisfaction based on equality theory, which compared the balance between input and output (Huppertz et al., 1978), attribution theory, which concluded that satisfaction was a function of certain factors (Folkes, 1984; Weiner, 1985), and compensatory theory, which focused on customer behavior or reaction to obtain dissatisfaction compensation after a purchase (Day, 1977; Richins, 1983).

Service quality and satisfaction

Recent research had shifted more attention and discussion on quality of service. Shelp (1981) defined excellent service as ongoing demand. Gronroos (1988) explained service as an activity or series of activities. Service was an interaction between customers, the service provider, or product, and the capability to solve customer problems and complaints.

Service was considered a product feature that enhanced its effectiveness or value to consumers (Lovelock, 1991). Adaptability and countability were two main service dimensions (Parasuraman et al., 1985). Service was visible but intangible and possessed certain characteristics that differentiated it from tangible products, such as intangibility (Gronroos, 1988; Heskett et al., 1994), inseparability, perishability and heterogeneity (Heskett et al., 1994).

Service quality was a relevant measure of customer expectations during service delivery (Gilbert and Carol, 1982) and was further considered a comparison result of

consumer expectation and service perception (Eugene et al., 1997).

Chen and Chang (2005) indicated that the difference in service quality resulted from the service difference between expectation and actuality. A similar concept appeared between service quality and service satisfaction. Gound and Kloppenborg (1991) posited that, to improve service quality and increase customer satisfaction, any possible factors causing quality discrepancies should first be eliminated. To achieve and process how consumers perceived customer satisfaction, depends to a great extent, on service quality or product quality.

Comparing the expectation setting prior to the purchase and the performance conducted after consumption of a product or service was a manner of assessing the final satisfaction level. Quality of service was the continuous evaluation by consumers and satisfaction could be a transient response to consumption. Good quality obviously enhanced service satisfaction and high-level satisfaction was the goal of first-class service. Although service quality did not equal satisfaction both were equally critical and relied on each other to reach a maximum result.

Research design

Ethnic group differences

Ethnic group referred to a group of people with mutual recognition through blood, lineage, or group segment to others by culture, language, religion, behavior, or biometrics. Ethnic group formation was often derived by geographical distributions. An ethnic group had high consistency on views and reactions of similar issues because of a collective memory imposed on the group through an evolutionary history.

This research investigated four ethnic groups, including Chinese, Caucasian, Japanese, and Korean. The Chinese group included passengers from Taiwan, Hong Kong, and Mainland China. The Japanese and Korean groups were classified by passenger nationality. The Caucasian group was identified by racial classification and was consequently the more complex nationality composition.

Caucasian group: Caucasians were the occidental tourists in this research, passengers consisting of the white race from the U.S, Canada, Australia, and European countries such as England, France, and Germany. Caucasian groups were generally reasonable, positive, sympathetic, and generous to others, and therefore, typically gave a greater satisfaction evaluation when rating service.

Korean group: The Korean group was typically prone to

forming perspectives and might express relatively extreme valuations such as true or false, correct or incorrect, good or bad. This had significant relevance for the Korean group to appraise satisfaction or quality of service, in which they would not provide a higher evaluation to the service above a level or express a lower evaluation for services below their expectations.

Japanese group: The Japanese group was one of the most meticulous consumers in the world. Japanese businesses were known for offering exquisite services and for their amazingly humble manner. Based on this behavior or cultural characteristic, the Japanese group normally had higher requirements regarding service quality.

Chinese group: The Chinese group was a general appellation of Chinese people that included those from Taiwan, Hong Kong, and Mainland China. The mainstream of Chinese culture was Confucianism with its central thought and doctrine on reservation and conservatism in expressing one's true opinions. Through the influence of Confucianism, the Chinese group was more inclined to provide a lower satisfaction evaluation to actual service quality, or higher satisfaction, though it might be the opposite.

Research hypothesis

This study explored the relativity between ethnic group and service satisfaction among air passengers to serve as consultation for airlines to improve their service. Thus, the following two hypotheses were proposed:

H₁: There is a significant correlation between ethnic passengers and satisfaction assessments.

H₂: Caucasian passengers expressed higher satisfaction and Japanese passengers expressed the lowest satisfaction, following Chinese and Korean passengers.

The Caucasian group tended to offer encouragements that were more positive and responsive. The hypothesis assumed that the Caucasian group showed the highest satisfaction and that the Japanese group had a lower satisfaction level. People attached great importance to services in Japan which was well known for its exquisite service.

Accordingly, the Japanese were more demanding of services than people of other countries or ethnic groups and typically indicated lower satisfaction with the same service quality. The 5-point Likert scale was adopted for the questionnaire.

Survey implementation

This study surveyed international airway passengers of

the C Airline between November and December 2010. The questionnaire was distributed randomly in the aircraft cabin prior to departure from Taipei. Survey contents were shown in Table 1, except for individual passenger data. To indicate the satisfaction level for comparing the differences among ethnic groups, satisfaction scores were measured as 5 (very satisfied), 4 (satisfied), 3 (general acceptable), 2 (dissatisfied) and 1 (very dissatisfied).

SERVICE SATISFACTION ANALYSIS

Sample descriptions

In total, 450 questionnaires were received for this survey with 439 valid questionnaires after selection, yielding a questionnaire response rate of 97.56%.

Basic characteristics

Table 2 showed that the age distribution of participants concentrated in the 31 to 50 years old age group, totaling 57.18%. The highest percentage of 31.21% was derived from the single age group of 31 to 40 years old.

The survey total of 439 participants was derived from 34 nationalities. According to the previous ethnic group classification, the results distinguishing among the ethnic groups were shown in Table 3 as well as the influence analysis of ethnic groups on cabin service satisfaction.

Travel purposes

Table 4 showed the distribution of travel purposes from the 439 participants. Official business trip was the main purpose of participants, followed by leisure trip (24.24%).

The total percentage of both travel purposes accounted for nearly 80%. This included the air route characteristics that had an endpoint in Taiwan.

Service satisfaction analysis

The overall service satisfaction evaluation was shown in Table 5. The ratio of satisfied or very satisfied was 85.65% with a mean value of 4.25 in overall cabin service. This result indicated high service satisfaction.

The item of cabin attendant performance had the highest satisfaction with a mean value of 4.30. The seating comfort item had the highest dissatisfaction or a very high dissatisfaction rate of 7.51% and the lowest satisfaction with a mean value of 3.76. This indicated a priority to improve seating comfort. The satisfaction mean value of each item was lower than the overall cabin service, except for cabin attendant performance. This signified that attendants were the key factor in cabin

Table 1. Cabin service satisfaction survey.

Service item	Detailed category
Cabin attendant performance	Attendants made you feel respected and attended
	Attendants were cordial and friendly
	Attendants promptly responded to your requests
	Attendants took the initiative and were resourceful as the situation demands
	Attendants comprehended the products and service proficiently in the cabin
	Attendants were calm and confident
	Attendants were groomed and well dressed
Meal quality	Language properly expressed and prompted the skills of attendants
	Meal delivery service of attendant
	Overall arrangement of food on the tray
	Flavor of meals offered
	Food portion was sufficient
	Quality of appetizer
	Salad
	Main course
	Dessert
	Soft drink variety
Alcoholic drink variety	
Entertainment	Entertainment equipment in the cabin
	Movie and TV programs
	Music program options
	In-cabin newspapers and magazines
Cabin environment and facilities	Air circulation
	Cabin cleanliness and order
	Cabin furnishing and environment
	Overall cleanliness of toilets
Seating comfort	Comfort level of seats

Table 2. Basic data descriptive analysis.

Age group	Percentage in participation
21 years under	2.51
21-30 years	19.36
31-40 years	31.21
41-50 years	25.97
51-60 years	15.94
61 years above	5.01

Table 4. Primary travel purpose of participants.

Travel purpose	Percentage
Official business	55.22
Exhibition or conference	5.56
Leisure	24.24
Visiting friends and relatives	8.27
Studying abroad	2.08
Other	4.63

Table 3. Ethnic groups and passenger nationality classification.

Ethnic group	Number (percentage)
Caucasian	82 (18.68)
Chinese	117 (26.65)
Japanese	59 (13.44)
Korean	103 (23.46)
Others	78 (17.77)

service satisfaction.

Cross analysis between variables and satisfaction

This research adopted the test of independence on cross-analysis between satisfaction and socioeconomic variables such as gender, age, travel purpose, and ethnic group. The mean and *p*-value were also calculated and shown in Table 6.

Table 5. Overall service satisfaction evaluation.

Satisfaction Item	Very satisfied (%)	Satisfied (%)	Average (%)	Dissatisfied (%)	Very dissatisfied (%)	Mean (%)
Cabin attendant performance	45.33	40.77	12.76	0.91	0.23	4.30
Meal quality	20.50	43.28	31.21	4.33	0.68	3.79
Entertainment	33.03	43.96	18.91	3.87	0.23	4.06
Cabin environment and facilities	23.46	40.55	32.80	2.28	0.91	3.83
Seating comfort	18.91	46.47	27.11	6.83	0.68	3.76
Overall cabin service	42.60	43.05	13.21	0.46	0.68	4.25

Table 6. Socioeconomic variables satisfaction cross-analysis.

Variable		Very satisfied	Satisfied	Average	Dissatisfied	Very dissatisfied	Mean	χ^2 value	<i>p</i> -value
Gender	Male	105	163	56	3	3	4.10	9.280	0.055
	Female	22	58	27	2	0	3.92		
Age group	20 and under	3	6	2	0	0	4.09	29.943	0.163
	21-30	20	47	18	0	0	4.02		
	31-40	38	75	23	1	0	4.09		
	41-50	38	55	19	1	1	4.12		
	51-60	19	29	18	2	2	3.87		
	60 above	9	9	3	1	0	4.18		
Seating class	First	3	2	0	0	0	4.60	40.177	0.000
	Business	52	56	12	1	0	4.31		
	Economic	72	163	71	4	3	3.95		
Ethnic	Caucasian	34	39	9	0	0	4.30	39.581	0.000
	Chinese	27	59	29	1	1	3.94		
	Japanese	10	26	19	2	2	3.68		
	Korean	31	54	18	0	0	4.13		
	Others	25	43	8	2	0	4.17		

Statistical significance at the 5% levels.

The analysis of 439 participants included 330 men and 109 women, showing no significant differences between gender and satisfaction ($\chi^2 = 9.280 < 9.488$, $p = 0.055$). Age also showed no significant difference, with a satisfaction rate under the 5% significant level ($\chi^2 = 29.943 < 31.410$, $p = 0.163$).

In total, 313 participants were passengers in the economy class which was more than 71%. This showed significant differences in satisfaction between cabin classes ($\chi^2 = 40.177 > 15.507$, $p = 0.000$). Average satisfaction in first class was obviously higher. Service quality was originally set differently among different classes in the design and planning stages. Therefore, it was understandable that the results revealed different levels of customer satisfaction among different cabin

classes.

The test results based on the five groups (Caucasian, Chinese, Japanese, Korean, and others) showed significant differences ($\chi^2 = 39.581 > 26.296$, $p = 0.000$). The Caucasian group clearly showed the highest average satisfaction result, and the Japanese group showed the lowest. Another test result was $\chi^2 = 31.651 > 21.026$ and $p = 0.000$, which eliminated other groups. These arrived at the same conclusion, that ethnic difference was an influencing factor of service satisfaction level.

SATISFACTION ANALYSIS OF ETHNIC GROUP

Significant differences existed among ethnic groups based on the foregoing test results. Analysis of variance

Table 7. ANOVA of cabin attendant performance satisfaction on ethnic difference.

Satisfaction ethnic	Very satisfied	Satisfied	Average	Dissatisfied	Very dissatisfied	Mean	SD
Caucasian	58	22	2	0	0	4.68	0.52
Chinese	36	52	27	2	0	4.04	0.78
Japanese	12	29	15	2	1	3.83	0.85
Korean	42	52	9	0	0	4.32	0.63
Others	51	24	3	0	0	4.62	0.56
F=22.040 /p = 0.000						4.30	0.67

Table 8. ANOVA of meal quality satisfaction on ethnic difference.

Satisfaction ethnic	Very satisfied	Satisfied	Average	Dissatisfied	Very dissatisfied	Mean	SD
Caucasian	33	30	19	0	0	4.17	0.78
Chinese	14	41	59	3	0	3.56	0.74
Japanese	1	33	15	8	2	3.36	0.87
Korean	22	52	24	5	0	3.88	0.80
Others	20	34	20	3	1	3.88	0.88
F=11.158 /p = 0.000						3.79	0.81

Table 9. ANOVA of entertainment satisfaction on ethnic difference.

Satisfaction ethnic	Very satisfied	Satisfied	Average	Dissatisfied	Very dissatisfied	Mean	SD
Caucasian	38	28	15	1	0	4.26	0.80
Chinese	35	55	25	2	0	4.05	0.76
Japanese	12	27	12	7	1	3.71	0.98
Korean	30	51	18	4	0	4.04	0.79
Others	30	32	13	3	0	4.14	0.83
F=4.028 /p = 0.001						4.06	0.83

(ANOVA) was adopted to further discuss the ethnic differences in six cabin service items.

Cabin attendant performance

The satisfaction difference of cabin attendant performance on ethnic group was shown in Table 7. The satisfaction mean value was 4.30, where Caucasian of 4.68 was the highest, Japanese of 3.83 was the lowest, and Korean and Chinese were between the Caucasian and Japanese. The result showed the significant difference among ethnic groups on cabin attendant performance by ANOVA ($F = 22.040$, $p = 0.000$).

Meal quality

Table 8 showed the result of ANOVA on the survey of meal quality satisfaction. The Caucasian group still had a higher satisfaction rate than other ethnic groups, and the Japanese group had the lowest satisfaction. The mean

value of satisfaction exhibited significant difference among ethnic groups on meal quality as a result of ANOVA ($F = 11.158$, $p = 0.000$).

Entertainment

The satisfaction analysis of cabin entertainment was shown in Table 9. The satisfaction of the Caucasian group was 4.26 higher than the overall mean value of 4.06. The mean value of satisfaction of the Chinese and Korean were lower than the overall mean value, and satisfaction of the Japanese group remained the same, at the lowest. The test results ($F = 4.028$, $p = 0.001$) also revealed significant differences on cabin entertainment among ethnic groups.

Cabin environment and facilities

The mean value of satisfaction of cabin environment and facilities was 3.83, shown in Table 10. The Caucasian

Table 10. ANOVA of cabin environment and facilities satisfaction on ethnic differences.

Satisfaction ethnic	Very satisfied	Satisfied	Average	Dissatisfied	Very dissatisfied	Mean	SD
Caucasian	32	30	19	1	0	4.13	0.81
Chinese	26	47	41	3	0	3.82	0.81
Japanese	4	22	27	3	3	3.39	0.89
Korean	20	50	31	1	1	3.84	0.78
Others	21	29	26	2	0	3.88	0.84
F=7.903 /p = 0.000						3.83	0.82

Table 11. ANOVA of seating comfort satisfaction on ethnic differences.

Satisfaction ethnic	Very satisfied	Satisfied	Average	Dissatisfied	Very dissatisfied	Mean	SD
Caucasian	26	38	15	3	0	4.06	0.81
Chinese	15	58	39	5	0	3.71	0.74
Japanese	7	16	23	11	2	3.25	1.01
Korean	12	55	26	9	1	3.66	0.83
Others	23	37	16	2	0	4.04	0.78
F=11.032 /p = 0.000						3.76	0.84

Table 12. ANOVA of overall cabin service satisfaction on ethnic differences.

Satisfaction ethnic	Very satisfied	Satisfied	Average	Dissatisfied	Very dissatisfied	Mean	SD
Caucasian	58	21	3	0	0	4.67	0.55
Chinese	35	56	26	0	0	4.08	0.72
Japanese	7	34	15	1	2	3.73	0.83
Korean	42	52	9	0	0	4.32	0.63
Others	45	26	5	1	1	4.45	0.78
F=19.235 /p = 0.000						4.25	0.70

group expressed the highest satisfaction rate of 4.13 among the four ethnic groups, the second was the Korean group at 3.84, followed by the Chinese group at 3.82, and the Japanese group was the lowest at 3.39. A significant difference existed among the different ethnic groups on cabin environment and facilities ($F = 7.903$, $p = 0.000$).

Seating comfort

The test result of seating comfort satisfaction was shown in Table 11, with a mean value of 3.76. The satisfaction in descending order was Caucasian at 4.06, Chinese at 3.71, Korean at 3.66, and finally, the Japanese at 3.25. The result also revealed a significant difference among ethnic groups on seating comfort from the ANOVA ($F = 11.032$, $p = 0.000$).

Overall cabin services

The satisfaction of overall cabin service was shown in

Table 12. The Caucasian group showed the highest satisfaction at 4.67, followed by the Korean group at 4.32, and the Chinese group at 4.08. The Japanese group presented a satisfaction mean value of 3.73, which was the lowest. A significant difference of average satisfaction level existed in overall cabin service among the different ethnic groups ($F = 19.235$, $p = 0.000$).

IMPROVING STRATEGIES

Summary of questionnaire analysis

The testing results showed that ethnic groups could be a major satisfaction influence factor. This meant H_1 was supported. Significant correlations existed between the ethnic origin of passengers and satisfaction levels.

Table 13 further demonstrated the satisfaction analysis of ethnic groups in overall cabin service and five cabin service items. The Caucasian group again showed the highest satisfaction evaluation rate for all five cabin service items.

Table 13. Ethnic group satisfaction in cabin service items.

Cabin service item	Ethnic group			
	Caucasian	Korean	Chinese	Japanese
Cabin attendant	Highest	Second highest	Second lowest	Lowest
Meal quality	Highest	Second highest	Second lowest	Lowest
Entertainment	Highest	Second lowest	Second highest	Lowest
Cabin environment and facilities	Highest	Second highest	Second lowest	Lowest
Seating comfort	Highest	Second lowest	Second highest	Lowest
Overall cabin service	Highest	Second highest	Second lowest	Lowest
Hypothesis verification	Subsisted	Subsisted	Subsisted	Subsisted

Table 14. Satisfaction ranking of cabin service items (higher scores signify lower satisfaction).

Cabin service	Ethnic group				Total score	Improvement priority
	Caucasian	Korean	Chinese	Japanese		
Cabin attendants	1	1	2	1	5	5
Meal quality	3	3	5	4	15	2
Entertainment	2	2	1	2	7	4
Cabin environment and facilities	4	4	3	3	14	3
Seating comfort	5	5	4	5	19	1

Table 15. Seat comfort satisfaction analysis.

Service item	Mean	SD	Improving priority
Seating comfort	3.76	0.84	non

The Japanese group showed the lowest satisfaction level for all five items. The Korean group expressed three second highest satisfaction items and the second lowest satisfaction in entertainment and seating comfort.

The Chinese group expressed two categories that were the second highest satisfaction and three categories as the second lowest satisfaction. Caucasian passengers obviously had the highest satisfaction level. The Japanese group showed the least satisfaction and the Chinese and Korean groups were in the middle. This revealed that H_2 was supported.

After confirming the correlation among passengers of different ethnic origins and satisfaction rate, it was crucial to pinpoint the service areas that urgently needed improvement. A further survey of satisfaction ranking on cabin services was conducted on ethnic groups where the lower satisfaction level had higher scores.

In summary, the service item score of each ethnic group was shown in Table 14. A higher total score implied lower satisfaction rate and was thus a higher priority to improve. Cabin attendant performance obtained the highest satisfaction in five cabin service items, followed by entertainment. The lowest satisfaction

item was seating comfort and meal quality in a sequence that had no direct relevance to personnel. These were the two major categories that should be treated as more pressing for improvements.

Improvement strategies

Seating comfort

For the seating comfort item requiring priority improvements, an additional analysis result was shown in Table 15 with a discussion that follows.

The satisfaction mean of seating comfort was 3.76, showing that the Japanese group had the lowest satisfaction level, and the Caucasian group expressed the highest in Table 12. The result appeared to have some differences in general cognition. Seating comfort was affected by the existing individual seating space, whereas passenger body size had a direct effect on the comfort level of the seat.

Occidentals were generally taller and bigger in body size, and the size of cabin seats might not meet their physical comfort needs. Caucasians therefore might show lower satisfaction because of the narrow seating space. Japanese people were comparatively smaller in body size and speculated to have higher satisfaction with the same seating arrangement.

However, the result of satisfaction analysis showed no direct correlation between seating space and passenger

Table 16. Influencing factors of cabin meal satisfaction analysis.

Item or category	Meal	Mean	Improving priority
Local dishes	Chinese food (127, 28.93%)	3.77	2
	Japanese food (55, 12.53%)	3.71	1
	Western style food (170, 38.72%)	3.87	3
	Other (87, 19.82%)	3.88	4
Main courses	Seafood (fish/shrimp) (108, 24.60%)	3.79	4
	Poultry (chickens/ducks) (127, 28.93%)	3.60	2
	Meat (cattle/sheep/pigs) (184, 41.91%)	3.54	1
	Vegetables (20, 4.56%)	3.73	3
Overall appraisal	Overall arrangement of food on the tray	3.87	2
	Flavor in general	3.68	1
	Weight and amount	3.87	2
Content of meals	Appetizer	3.75	4
	Salad	3.67	1
	Main course	3.72	2
	Dessert	3.73	3
	Type of soft drink	3.92	5
	Type of drink	3.96	6

body size.

Expanding the seating space was therefore not a recommended solution to improve satisfaction level in this area. Another improvement consideration to enhance seating comfort would be to increase seat reclining angle which consequently would prevent the pillow from slipping down from the neck. This would certainly provide passengers with a more comfortable and sound sleep, particularly during longer flights.

A better designed folding table behind the front seat would be more convenient for neighbor passengers moving in and out of their seats. A good strategy to improve the passenger satisfaction rate would be to design more ergonomically comfortable seating areas and conventional designs that reduced interference or effect between front and rear seats.

Meal quality

An additional satisfaction survey of cabin meal covered local dishes, main courses, and meal content, as shown in Table 16. Japanese food obtained the lowest satisfaction level in the local dish category. Meat had the highest consumption, despite satisfaction resulting at the lowest. The overall appraisal of meals revealed that food flavor and salad quality must be improved.

Food for the actual in-flight meal was prepared by the central kitchen prior to aircraft departure, whereas food preparation work in flight consisted of maintaining food

temperature, reheating, and distribution.

To improve meal flavor and satisfy passengers with more diverse tastes, increased coordination with contracted catering kitchens was strongly recommended. Vegetables and fruits in traditional salads tasted relatively stale in most in flight meals because of refrigeration. To retain freshness, shortening the time gap between salad preparations and serving time was advisable. If this was less feasible, another proposition was to substitute the traditional salad for fruit juice or different types of salads, such as egg salad or macaroni salad.

To improve cabin meal satisfaction, meeting the needs of customer choices was a crucial requirement. A survey of customer preference could be useful for airlines to adjust the ratio of number of meals prepared.

Table 17 was a passenger preference survey of cabin meals. Western style food obtained the highest preference numbers, with relatively higher satisfaction (Table 16). Consequently, serving Western style food was recommended as the first preferable choice. For the main course, seafood had the highest preference and satisfaction rate (Table 16) and could be offered as a priority. Although, meat showed a higher preference, it resulted in lower satisfaction because occasionally, it has less-satisfied tastes (Table 16). This implied that, although considerable numbers of passengers preferred meat as the main meal, the satisfaction level remained low. Focusing more attention on improvement as a priority was recommended.

A further exploration of the differences between ethnic

Table 17. Passenger cabin meals preference survey.

Item or category	Meal	Preference ratio	Providing priority
Local dishes	Chinese food	113 (25.74)	2
	Japanese food	98 (22.32)	3
	Western style food	161 (36.67)	1
	Others	67 (15.26)	4
Main courses	Seafood (fish/shrimp)	173 (39.41)	1
	Poultry (chickens/docks)	97 (22.10)	3
	Meat (cattle/sheep/pigs)	131 (29.84)	2
	Vegetables	38(8.66)	4

Table 18. Satisfaction of cabin meals among ethnic groups.

Item or category	Meal	Ethnic group			
		Caucasian	Korean	Chinese	Japanese
Local dishes	Chinese food	4.19 (25)	3.72 (26)	3.49 (46)	3.44 (12)
	Japanese food	3.90 (4)	4.00 (2)	4.00 (10)	2.70 (15)
	Western style food	4.15 (48)	3.74 (32)	3.38 (53)	3.45 (26)
	Others	4.23 (5)	3.75 (43)	3.21 (8)	3.67 (6)
Main course	Seafood (fish/shrimp)	4.29 (23)	3.96 (37)	3.39 (31)	2.61 (19)
	Poultry (chickens/docks)	3.89 (14)	3.93 (38)	3.68 (46)	2.98 (25)
	Meat (cattle/sheep/pigs)	4.25 (37)	3.89 (25)	3.35 (34)	3.29 (15)
	Vegetable food	4.75 (8)	4.00 (3)	3.65 (6)	N/A

Table 19. Cabin environment and facilities satisfaction influence factors survey.

Item or category	Average satisfaction	Improving priority
Overall evaluation of cabin environment and facilities	4.09	4
Air circulation	4.04	3
Cabin cleanliness	4.19	5
Cabin environment and furnishings	4.04	2
Overall cleanliness of toilets	3.91	1

groups (Table 18) showed that Western-style food had the largest selection number by each individual ethnic group. However, the Caucasian group was more easily satisfied with Chinese food rather than Western-style food because of the popular and abundant varieties of Chinese cuisine.

Even though the Japanese group tended to favor food that was closer to their native tastes, the satisfaction rate was significantly lower and they seemed to be more satisfied with meat on board. Therefore, accounting for this result when more Japanese passengers were on board was advisable. For the main course, Asians seemed to prefer poultry and showed a higher satisfaction rate, whereas Caucasians were generally more in favor of meat. Although there were fewer

demands for vegetarian food, the satisfaction was higher. Because of an increase in the vegetarian population, the variety of vegetarian food could be increased.

Cabin environment and facilities

Table 19 showed that overall lavatory sanitation should be improved first because it yielded the least satisfaction as the satisfaction influence factor of cabin environment and facilities. The extended survey for overall cleanliness of the toilet item (Table 20) indicated that more than 10% of the survey participants negatively commented on toilets being unsanitary and smelly.

During actual operation, attendants were required to

Table 20. Toilet cleaning cognition survey analysis.

Opinion	Percentage	Improving priority
Smelly	20 (4.56%)	2
Dirty	27 (6.15%)	1
Lacks sufficient toilet paper, soap, paper towels	13 (2.96%)	3
Good	379 (86.33%)	N/A

clean the toilets at scheduled times during the flight. Additional sweeping was performed only when the lavatory appeared to be unsanitary, which did not always meet passenger expectations.

To reinforce cabin services, increasing the frequency of checking lavatory sanitation and replenishing toilet paper when required was important. Some further essential steps included continuing training courses and amendments on the attendant operational menu.

A multilingual cabin staff was advantageous for a greater understanding of passenger needs. This helped prevent errors in message conveyance and smoothed out communication misunderstandings between airline staff and passengers, thus improving satisfaction rate.

CONCLUSION

The analysis result of cabin service satisfaction based on different ethnic groups showed that disparity stemmed from different ethnic groups who had a major effect on satisfaction rate. Further analysis on the satisfaction difference among ethnic groups had shown that the Caucasian group expressed the highest satisfaction, followed by Koreans, Chinese, and the Japanese showed the lowest satisfaction.

Based on this result, the airline might provide appropriate services to improve customer satisfaction according to ethnic differences.

Cabin attendant performance attained the highest satisfaction, which was the only item higher than the overall cabin service satisfaction mean value. This implied that the flight attendant was the most influential factor in the cabin service satisfaction rating.

To improve cabin service satisfaction, airlines should plan more comprehensive service designs and schedule additional training courses for flight crew members, particularly in the area of ethnic differences. For example, offering multilingual services helped accurately understand ethnic travelers, providing them with a greater sense of comfort.

Seating comfort showed the least satisfaction among all service categories, though it did not significantly relate to the body sizes of ethnic groups. An improvement strategy should begin with designing more ergonomically comfortable seats.

Meal quality was another item requiring preferential

improvement. Although seafood held the highest preference, differences remain because of ethnic diversity. Asians preferred poultry and expressed higher satisfaction, whereas Caucasians favored meat to other types of food offered. Because of the vast differences and requirements of ethnic passengers, greater consideration should be placed on planning cabin meals.

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