Note: The primary goal of this blog is to demonstrate how to evaluate an event and apply various data analysis techniques to discover meaningful insights from the dataset.

Evaluator and reporter: Hai Linh Nguyen

Location: Khon Kaen province, Thailand

Event: International Food Event

1. Introduction

The International Food Event is a vibrant annual festival organized by the Faculty of Technology, Khon Kaen University. Held over three days, this event draws an impressive crowd of up to 100,000 attendees from across the Southeast region of Thailand and abroad. It celebrates cultural diversity and culinary creativity, offering a wide range of engaging activities such as food competitions, cooking shows, cultural dance performances, and an exciting array of food booths.

Visitors have the opportunity to experience and enjoy cuisines from various countries including Indonesia, Vietnam, Thailand, Korea, China, Myanmar, Cambodia, Japan, and Laos. The event not only serves as a platform for cultural exchange but also provides a space for fun, learning, and community connection through food and festivity.

2. Report Objectives

The primary goal of this report is to conduct a comprehensive analysis of the International Food Event, focusing on participant satisfaction with various activities. Through structured data collection and thorough analysis, it identifies the most appreciated aspects of the event and suggests areas for improvement.

3. Evaluation Procedure

An online evaluation was conducted using a simple random sampling method. Participants at the event were invited to fill out a form with three main sections:

- Demographics: Gender (male, female, not specified), age (under 18 years old, 18-25 years old, 26-45 years old, 46-60 years old, and more than 60 years old), and participant type (Student, KKU Staff, Alumni, General Public).
- Satisfaction: Ratings (0-5 scale, where 0 = Not Applicable) across 11 aspects of the event (event duration, event avenue location satisfaction, parking area, food competition - food heritage to future, talk and show by chief Kamnang, cooking show by chief Pojavith, dance activity, participant random dance activity, live music performance, food booths, and the overall satisfaction).
- Other feedbacks.

Two language versions of the form were used: Thai for local participants and English for international participants.

4. Data Analysis Methods & Outcomes

Sample: There was a total of 107 individuals participated in the evaluation. However, three cases were excluded from the analysis due to missing data, and two participants did not attend the entire event, rendering it impossible to assess their overall satisfaction with the event. Here are the data analysis methods and outcomes.
Analysis Tools:

- Frequencies and percentages to analyze demographic information. This will give insights into the types of participants who care much about the event.
- Analysis of variance (ANOVA) to see the significant differences among different categories. This will indicate the category that participants are satisfied the most and the area that needs improving.
- MANOVA to see the overall significant difference of satisfaction between Thai participants and international participants. It will show whether Thai participants or international participants needs more care and attention in the next year event.
- Principle Component Analysis (PCA) to check the categories that have close relationships with the overall satisfaction. The PCA biplot will allow for checking the aspect that influences participants' perception to feel satisfied with the overall event.
- Word cloud to examine feedbacks from participants.

5. Data Insights

4.1 Demographic information analysis

4.1.2 Demographic information for all participants

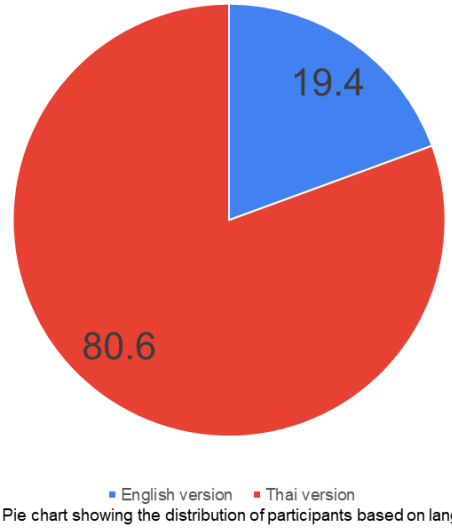


Figure 1. Pie chart showing the distribution of participants based on language version

The pie chart shows the distribution of participants based on the language version of the evaluation form, which reflects the nationality of the respondents. 83 participants (approximately 81%) used the Thai version, indicating they are likely Thai nationals. 20 participants (approximately 19%) used the English version, representing international attendees. This suggests that the majority of the respondents were Thai, but the event also attracted a notable number of foreign visitors.

Table 1. Percentage of all participants according to gender, age, and types

				Participant							
				Student		KKU Staffs		KKU Alumni		General interest	
				Count	Table N %	Count	Table N %	Count	Table N %	Count	Table N %
Age	Under 18 years old	Gender	Male	1	1.0%	0	0.0%	0	0.0%	0	0.0%
			Female	5	4.9%	0	0.0%	0	0.0%	0	0.0%
			Not specified	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	18 - 25 years old	Gender	Male	20	19.4%	2	1.9%	1	1.0%	0	0.0%
			Female	47	45.6%	1	1.0%	1	1.0%	1	1.0%
			Not specified	5	4.9%	0	0.0%	0	0.0%	0	0.0%
	26 - 45 years old	Gender	Male	5	4.9%	3	2.9%	0	0.0%	2	1.9%
			Female	3	2.9%	4	3.9%	1	1.0%	0	0.0%
			Not specified	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	46 - 60 years old	Gender	Male	0	0.0%	0	0.0%	0	0.0%	0	0.0%
			Female	0	0.0%	0	0.0%	0	0.0%	1	1.0%
			Not specified	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	More than 60 years old	Gender	Male	0	0.0%	0	0.0%	0	0.0%	0	0.0%
			Female	0	0.0%	0	0.0%	0	0.0%	0	0.0%
			Not specified	0	0.0%	0	0.0%	0	0.0%	0	0.0%

From Table 1, it can be seen that the majority of participants were students aged 18–25, accounting for approximately 70% of the total responses. Within this group, female students were the most dominant, making up 45.6%, followed by male students (19.4%), and unspecified gender (4.9%). A small portion of students (5.9%) were under 18.

- Other participant types—KKU staff, alumni, and general interest attendees—were present in smaller numbers:
- KKU Staff mostly fell within the 26–45 age group, with 3 males (2.9%) and 4 females (3.9%).
- KKU Alumni and General Interest participants were very limited in number, mostly showing up in the 18–45 age range, each constituting only about 1–2% in each category.
- Participants over 45 years old were extremely rare, with just one female general-interest participant (1%) in the 46–60 age group, and no participants over 60 reported.

4.1.3 Demographic information for international participants only

Table 2. Frequencies and percent of International participant type information.

Participant		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	18	90.0	90.0	90.0
	KKU Staffs	1	5.0	5.0	95.0
	General interest	1	5.0	5.0	100.0
	Total	20	100.0	100.0	

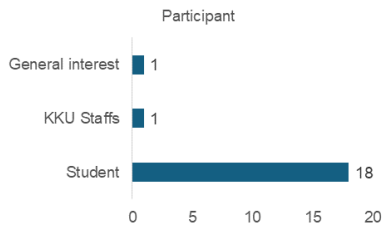


Figure 2. Chart of frequencies of international participants according to types

Table 3. Frequencies and percent of International participant age information.

Age		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 - 25 years old	14	70.0	70.0	70.0
	26 - 45 years old	6	30.0	30.0	100.0
	Total	20	100.0	100.0	

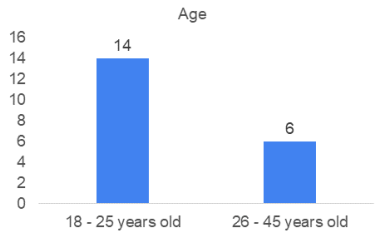
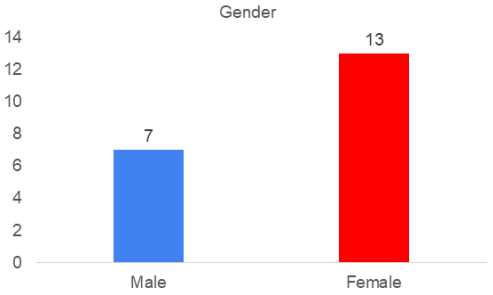


Figure 3. Chart of frequencies of international participants according to age

Table 4. Frequencies and percent of International participant gender information.

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	7	35.0	35.0	35.0
	Female	13	65.0	65.0	100.0
	Total	20	100.0	100.0	

Figure 4. Chart of frequencies of international participants according to gender



4.1.4 Demographic information for Thai participants only

Table 5. Frequencies and percent of Thai participant age information.

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Under 18 years old	6	7.2	7.2	7.2
	18 - 25 years old	64	77.1	77.1	84.3
	26 - 45 years old	12	14.5	14.5	98.8
	46 - 60 years old	1	1.2	1.2	100.0
	Total	83	100.0	100.0	

Table 6. Frequencies and percent of Thai participant type information.

Participant					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Student	68	81.9	81.9	81.9
	KKU Staffs	9	10.8	10.8	92.8
	KKU Alumni	3	3.6	3.6	96.4
	General interest	3	3.6	3.6	100.0
	Total	83	100.0	100.0	

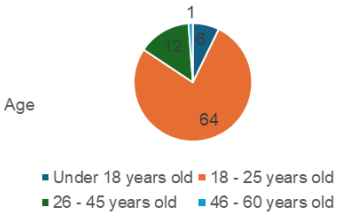


Figure 5. Chart of frequencies of Thai participants according to age.

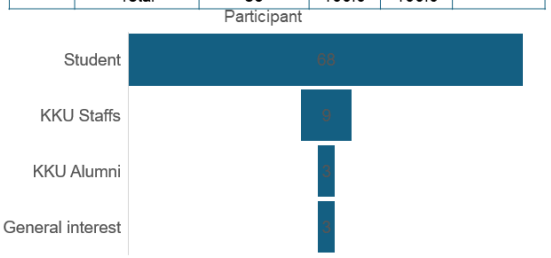
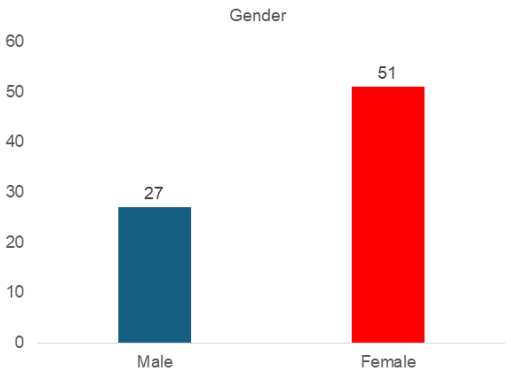


Figure 6. Chart of frequencies of Thai participants according to types.

Table 7. Frequencies and percent of Thai participant gender information.

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	27	32.5	32.5	32.5
	Female	51	61.4	61.4	94.0
	Not specified	5	6.0	6.0	100.0
	Total	83	100.0	100.0	

Figure 7. Chart of frequencies of Thai participants according to gender



Demographic information summary:

- Among the four groups, including students, KKU staff, KKU alumni, and general interest, a majority of participants are students.
- Within the student category, female students make up the largest portion, and they are generally between the ages of 18 and 25.
- This trend remains consistent when analyzing the English and Thai versions separately.

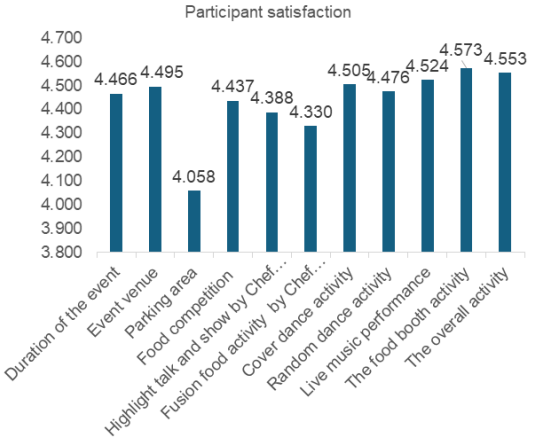
4.2 Satisfaction score analysis

ANOVA analysis

Table 8. Significant differences among satisfaction score means

Categories	Satisfaction scores		
Parking area	4.0583c		
Fusion food activity by Chef Pojavith		4.3301b	
Highlight talk and show by Chef Kamnang		4.3883ab	4.3883ab
Food competition		4.4369ab	4.4369ab
Duration of the event		4.4660ab	4.4660ab
Random dance activity		4.4757ab	4.4757ab
Event venue		4.4951ab	4.4951ab
Cover dance activity		4.5049ab	4.5049ab
Live music performance		4.5243ab	4.5243ab
The overall activity		4.5534ab	4.5534ab
The food booth activity			4.5728a

Figure 8. chart of satisfaction score means for all participants.



MANOVA Analysis

A Multivariate Analysis of Variance (MANOVA) was conducted to examine whether there was an overall significant difference in satisfaction levels across different categories between Thai and International participants at the food festival.

Box's Test of Equality of Covariance Matrices
Box's M = 151.362, F = 1.775, df1 = 66, df2 = 3902.163, Sig. = 0.000

The test result was significant ($p < 0.001$), indicating that the assumption of equal covariance matrices across groups was violated. Given this violation, Pillai's Trace was used for interpreting MANOVA results, as it is more robust to such violations.
The Pillai's Trace was 0.313 and P value = 0.000. This result indicate a statistically significant multivariate effect of participant group on satisfaction variables. The p-value < 0.001 suggests that overall satisfaction across different categories differed significantly between Thai and International participants.

Table 9. Significant differences between Thai and international participant satisfaction score in different categories.

Tests of Between-Subjects Effects									
Source		Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared	Satisfaction means of international participants	Satisfaction means of Thai participants
ID	Duration of the event	9.418	1	9.418	27.804	0.000	0.216	3.85b	4.61a
	Event venue	6.085	1	6.085	14.076	0.000	0.122	4b	4.61a
	Parking area	6.411	1	6.411	7.597	0.007	0.070	3.55b	4.18a
	Food competition	0.867	1	0.867	1.884	0.173	0.018	4.25a	4.48a
	Highlight talk and show by Chef Kamnang	3.743	1	3.743	6.909	0.010	0.064	4b	4.48a
	Fusion food activity by Chef Pojavith	1.314	1	1.314	1.911	0.170	0.019	4.1a	4.39a
	Cover dance activity	1.042	1	1.042	2.463	0.120	0.024	4.3a	4.55a
	Random dance activity	0.392	1	0.392	0.607	0.438	0.006	4.35a	4.51a
	Live music performance	4.468	1	4.468	10.946	0.001	0.098	4.1b	4.63a
	The food booth activity	0.741	1	0.741	1.763	0.187	0.017	4.4a	4.61a
	The overall activity	1.027	1	1.027	2.565	0.112	0.025	4.35a	4.60a

The follow-up univariate test of MANOVA offers detailed data on satisfaction differences between Thai and International participants across various event categories. In the cases with the p-values above 0.05, the satisfaction levels do not differ between Thai and international participants. The MANOVA and follow-up univariate tests show Thai participants were significantly more satisfied than international participants in specific areas, especially regarding event duration, venue, parking, live music, and highlight chef Kamnang show. The MANOVA analysis shows the significant difference based on different categories, but in Table 9, the overall activity category is not significant different. The possible explanation for this is that even though some individual categories (like parking or event duration) had statistically significant differences, they might not have been important enough to strongly influence people's overall perception of the event. As a result, their ratings for the overall activity did not significantly differ. This suggests that participants may prioritize different aspects when forming their general impression of the event. Therefore, a PCA for analyzing correlations was conducted to see the influence of each category on the overall satisfaction.

PCA Analysis

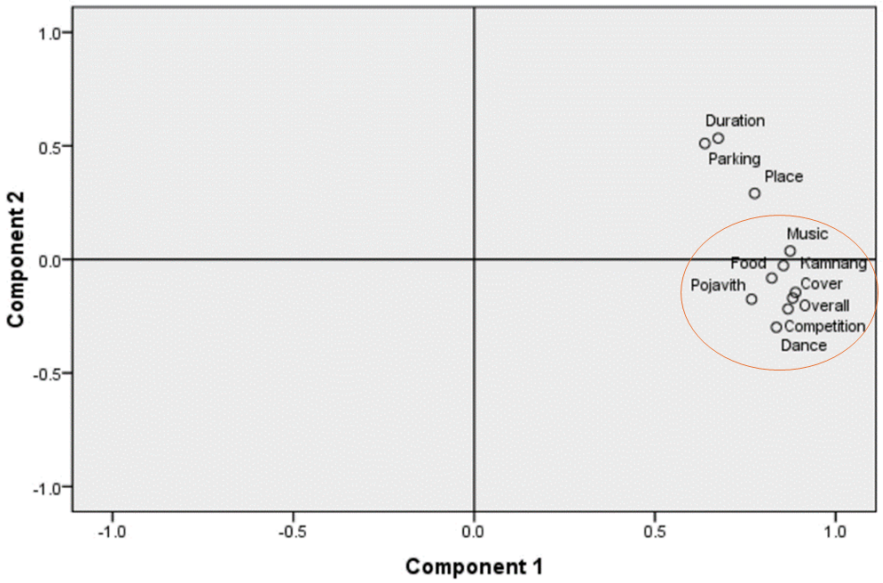


Figure 9. Correlations among different categories

The Principal Component Analysis (PCA) revealed that Component 1 accounts for 65.86% of the total variance, while Component 2 explains 7.79%. Most satisfaction categories show a strong correlation with each other, except for Duration of the Event, Parking Area, and Event Venue. Notably, Overall Satisfaction is closely aligned with Cover Dance Activity and Food Competition, suggesting that participants' satisfaction with these two activities contributes significantly to their overall perception of the event.

This finding supports the earlier interpretation from the MANOVA results. While there are statistically significant differences in ratings for duration, venue, and parking, these factors are not strongly tied to overall satisfaction. Therefore, even if international participants rated these specific aspects lower, they may still report high overall satisfaction if they enjoyed the key experience-driven components.

Word cloud for feedback of all participants



6 Conclusion

- Among the four groups, including Students, KKU staff, KKU Alumni, and General interest, a majority of participants are Students.
- Within the student category, Female Students make up the largest portion, and they are generally between the ages of 18 and 25. This trend remains consistent when analyzing the English and Thai versions separately.
- Participants are generally satisfied with the activities in the International Food Event. The food booth activity is the most enjoyed one whereas people are less satisfied with the parking area.
- International participants are less satisfied with parking, duration, event venue, and highlight talk and show by Chef Kamnang. However, these factors does not contribute much to their overall satisfaction and both groups have insignificantly satisfaction scores.
- The PCA graph for all participants showed there is a close relationship among the activities, except parking, venue, and duration. Thus, focusing on the current activities can help improve the overall satisfaction.
- Besides, based on the feedback cloud, the food event organizers should focus on adding more trash bins, more food, and suitable parking location.

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