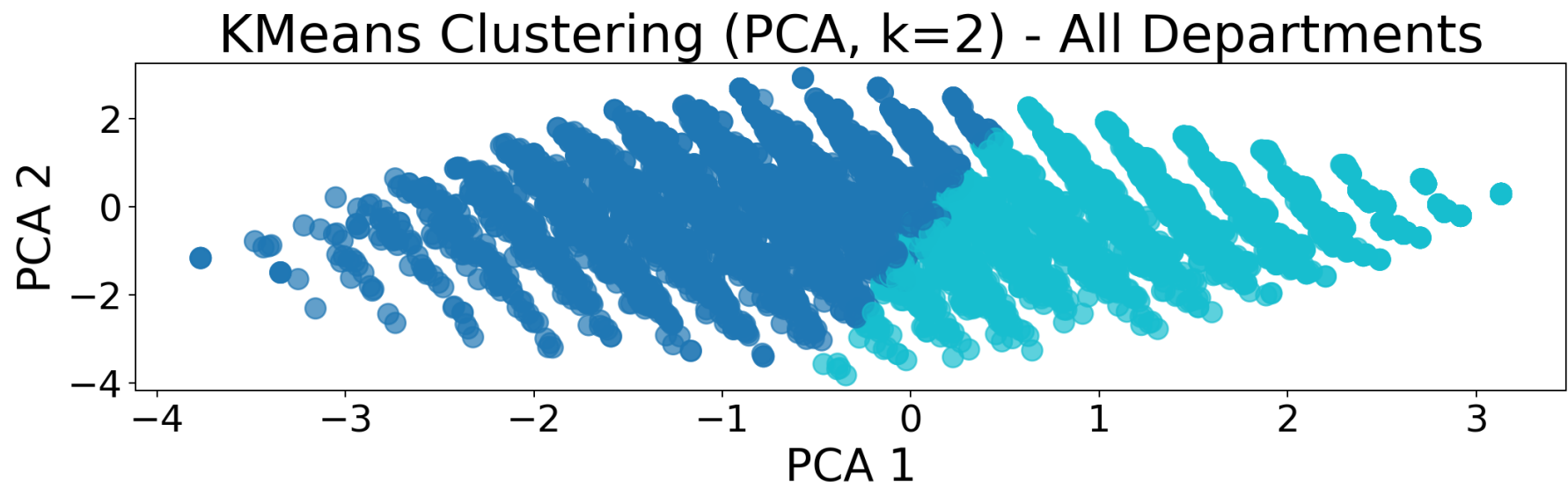


Clustering & Association Rule Mining Report

Department: All Departments

Dataset: All Datasets

Clustering (PCA)



Cluster Interpretation (Groq AI)

Based on the cluster centers, we can interpret the two clusters as follows:

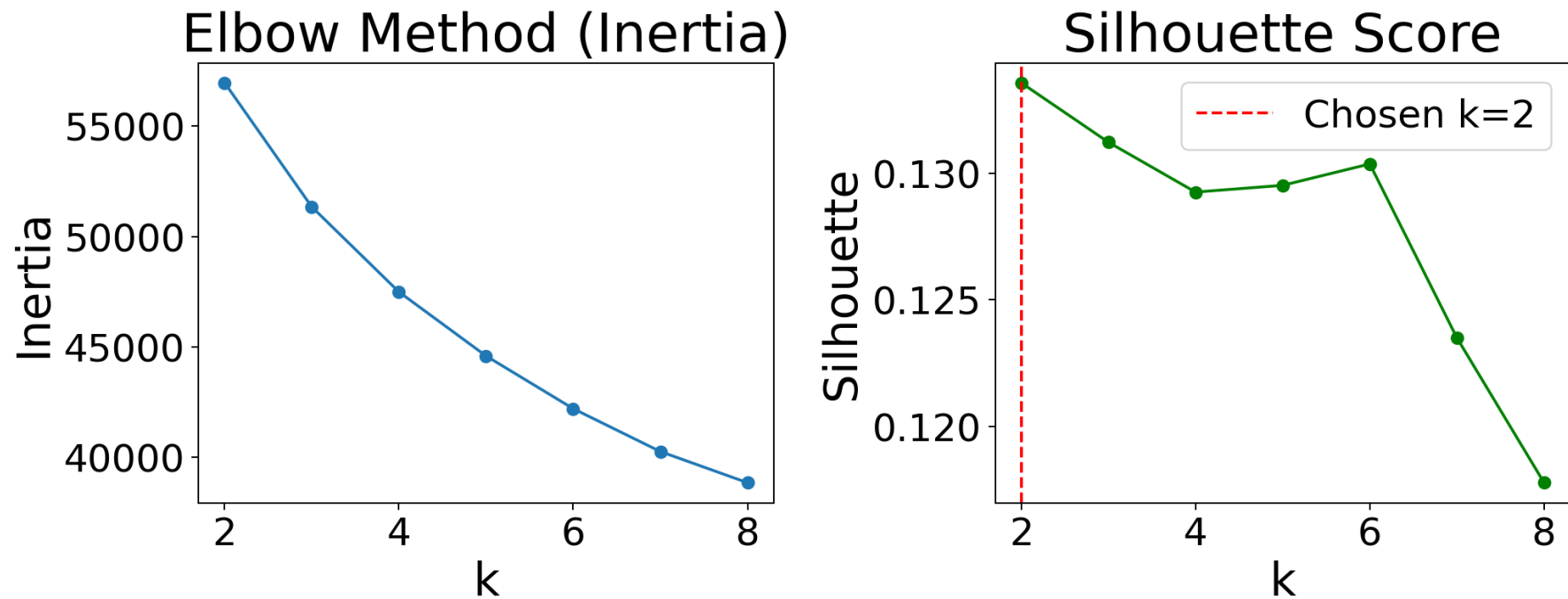
****Cluster 1: "Low-Rated Events"****

This cluster represents events that received low ratings across all features. The means for each feature are negative, indicating that these events fell short of expectations. Specifically, the low ratings for Venue, Speaker, and Allowance suggest that the logistics and execution of these events were subpar. The negative values for Objectives_Met, Facilitator_Rating, and Participant_Rating also imply that the events failed to meet their intended goals and did not engage the participants effectively.

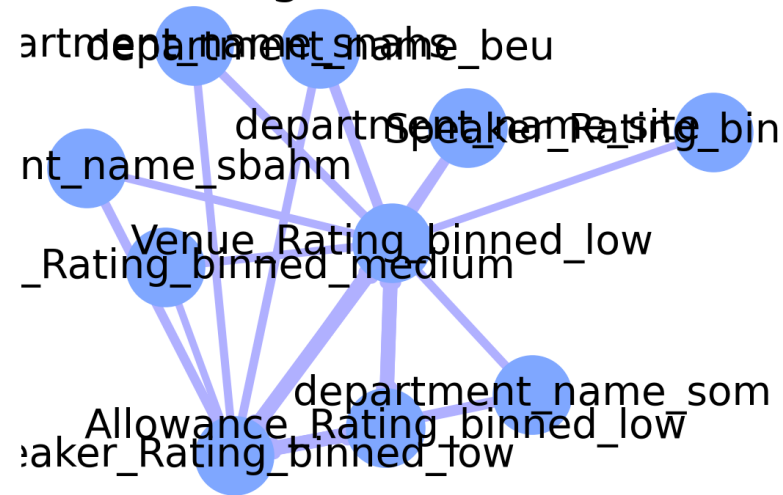
****Cluster 2: "High-Rated Events"****

In contrast, this cluster represents events that received high ratings across all features. The positive means for each feature indicate that these events exceeded expectations. The high ratings for Venue, Speaker, and Allowance suggest that the logistics and execution of these events were well-planned and effective. The positive values for Objectives_Met, Facilitator_Rating, and Participant_Rating also imply that the events achieved their intended goals and engaged the participants successfully. Overall, the two clusters seem to represent two distinct types of events: those that were poorly planned and executed (Cluster 1) and those that were well-planned and effective (Cluster 2). The choice of $k=2$ using the elbow and silhouette methods suggests that these two clusters capture the most significant patterns in the data.

Elbow & Silhouette Plots for k Selection



Association Rule Network (edges: rules, width: lift) - All Departments



ARM Results Table

| Antecedents | Consequents | Support | Confidence | Lift |
|--------------------------------|-----------------------------|---------|------------|-------|
| department_name_beu | Venue_Rating_binned_low | 0.114 | 0.571 | 1.044 |
| department_name_beu | Speaker_Rating_binned_low | 0.106 | 0.529 | 0.985 |
| department_name_sbahm | Venue_Rating_binned_low | 0.103 | 0.529 | 0.968 |
| department_name_sbahm | Speaker_Rating_binned_low | 0.106 | 0.542 | 1.009 |
| department_name_site | Venue_Rating_binned_low | 0.114 | 0.549 | 1.005 |
| department_name_site | Speaker_Rating_binned_low | 0.109 | 0.525 | 0.977 |
| department_name_snahs | Venue_Rating_binned_low | 0.110 | 0.543 | 0.994 |
| department_name_snahs | Speaker_Rating_binned_low | 0.105 | 0.520 | 0.968 |
| department_name_som | Venue_Rating_binned_low | 0.105 | 0.539 | 0.987 |
| department_name_som | Speaker_Rating_binned_low | 0.111 | 0.572 | 1.064 |
| Allowance_Rating_binned_low | Venue_Rating_binned_low | 0.278 | 0.615 | 1.126 |
| Venue_Rating_binned_low | Allowance_Rating_binned_low | 0.278 | 0.509 | 1.126 |
| Allowance_Rating_binned_medium | Venue_Rating_binned_low | 0.136 | 0.531 | 0.972 |
| Speaker_Rating_binned_low | Venue_Rating_binned_low | 0.333 | 0.620 | 1.134 |
| Venue_Rating_binned_low | Speaker_Rating_binned_low | 0.333 | 0.609 | 1.134 |

Speaker_Rating_binned_medium■Venue_Rating_binned_low■0.123■0.517■0.947
 Allowance_Rating_binned_low■Speaker_Rating_binned_low■0.277■0.612■1.140
 Speaker_Rating_binned_low■Allowance_Rating_binned_low■0.277■0.516■1.140
 Allowance_Rating_binned_medium■Speaker_Rating_binned_low■0.130■0.505■0.941
 Allowance_Rating_binned_low, Venue_Rating_binned_low■Speaker_Rating_binned_low■0.179■0.642■1.194
 Allowance_Rating_binned_low, Speaker_Rating_binned_low■Venue_Rating_binned_low■0.179■0.645■1.180
 Speaker_Rating_binned_low, Venue_Rating_binned_low■Allowance_Rating_binned_low■0.179■0.536■1.185

Descriptive Analysis Table

Feature■Mean■Rating
 Objectives_Met■1.94■satisfactory
 Venue_Rating■1.36■moderately_satisfactory
 Schedule_Rating■1.90■satisfactory
 Allowance_Rating■1.62■satisfactory
 Speaker_Rating■1.40■moderately_satisfactory
 Facilitator_Rating■1.91■satisfactory
 Participant_Rating■1.92■satisfactory

Descriptive Analysis (Categorical)

Descriptive Analysis for: All Departments

Categorical Columns Value Counts:

department_name value counts:

department_name

SITE 1964

SNAHS 1909

BEU 1893

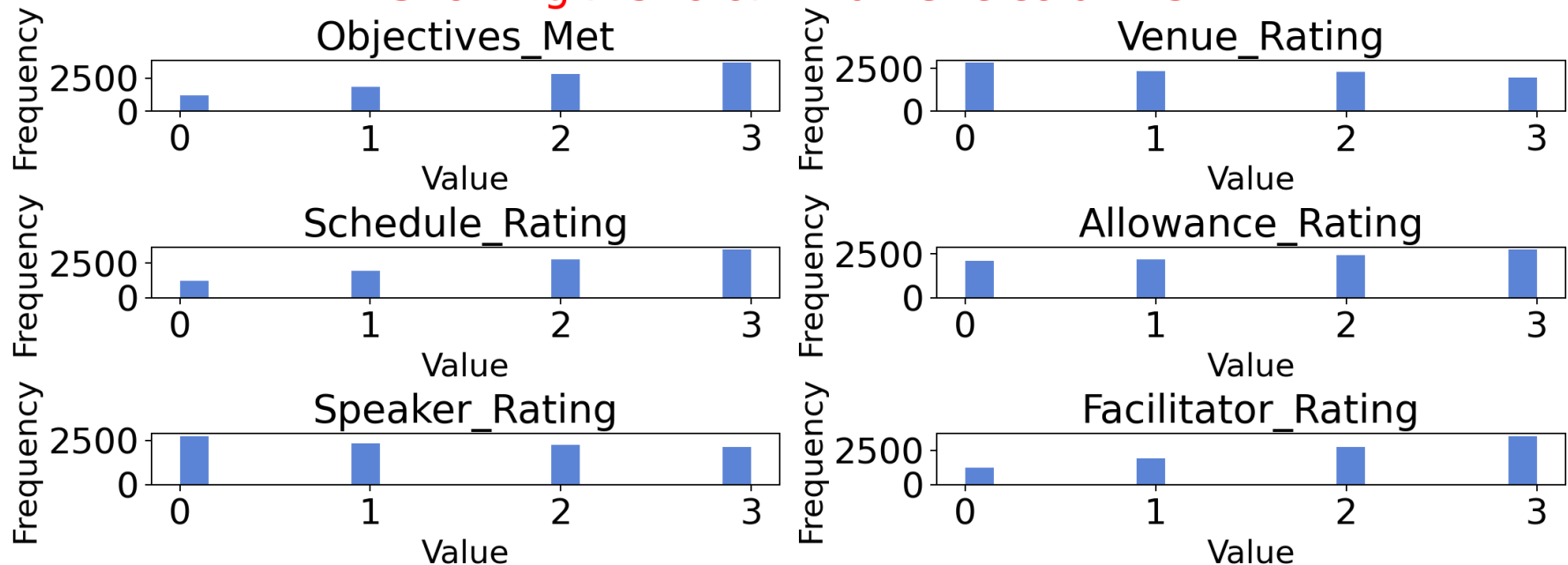
SBAHM 1840

SOM 1837

Histograms

Histograms

Showing first 6 of 7 numeric columns



Recommendations

****Recommendations for Improvement:****

- **Venue_Rating**:** With a mean rating of 1.36, the venue rating is the lowest among all categories. Consider exploring alternative venues that better meet the needs and expectations of participants. Invest in improving the ambiance, amenities, and overall experience of the venue to boost this rating.
- **Speaker_Rating**:** Although satisfactory, the speaker rating (mean=1.40) is the second-lowest. Evaluate the selection process for speakers and consider providing additional training or support to enhance their presentation skills and engagement with participants.
- **Allowance_Rating**:** With a mean rating of 1.62, the allowance rating is relatively lower compared to other categories. Review the allowance structure and consider adjusting it to better meet the needs and expectations of participants.

****Strengths to Maintain:****

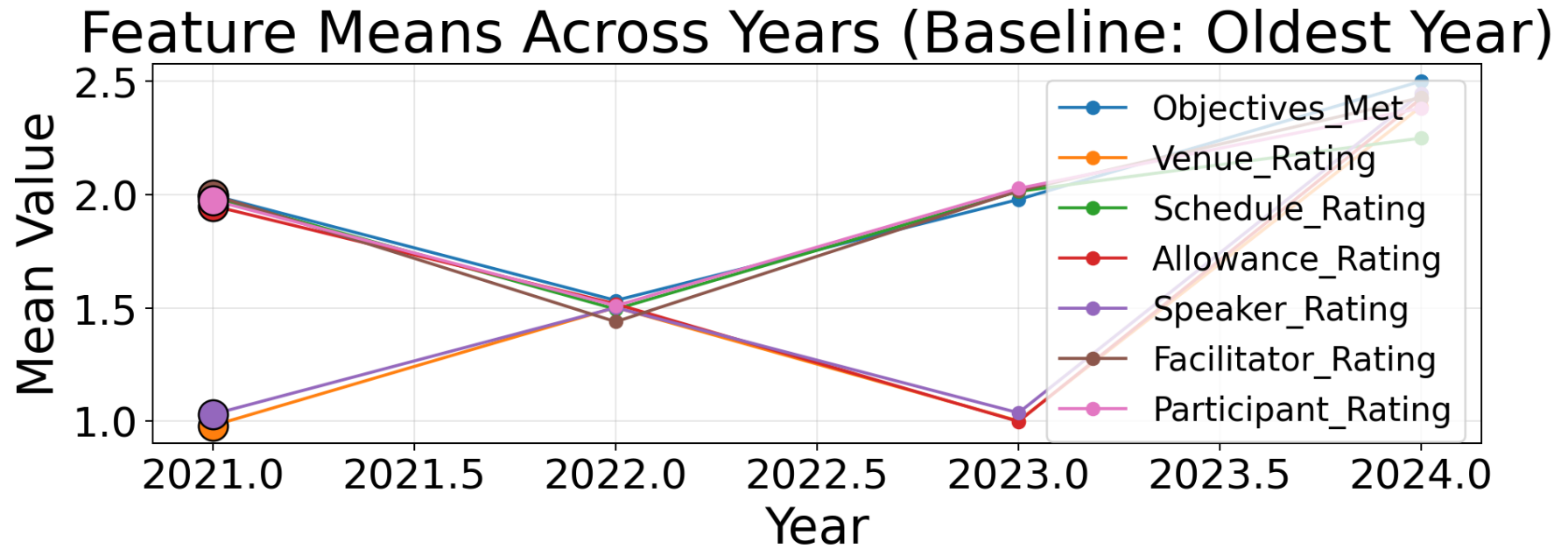
1. ****Facilitator_Rating**** and ****Participant_Rating****: Both of these categories have high mean ratings (1.91 and 1.92, respectively), indicating that the facilitators and participants are generally satisfied with the experience. Continue to support and invest in the facilitators and participants to maintain these high ratings.
2. ****Objectives_Met****: The satisfactory rating (mean=1.94) suggests that the objectives of the event are being met. Maintain the current approach to setting and achieving objectives to ensure continued success.
3. ****Schedule_Rating****: The satisfactory rating (mean=1.90) indicates that the schedule is well-planned and effective. Continue to prioritize effective scheduling to ensure a smooth and productive experience for participants.

****Actionable Insights:****

1. ****Correlation between Venue_Rating and Speaker_Rating****: The relatively low ratings for both venue and speaker suggest that there may be a correlation between the two. Consider evaluating the impact of the venue on the speaker's performance and vice versa.
2. ****Participant Engagement****: The high participant rating (mean=1.92) suggests that participants are engaged and satisfied with the experience. Consider building on this strength by introducing new engagement strategies or activities to further enhance the participant experience.
3. ****Continuous Evaluation and Improvement****: Regularly collect feedback from participants and stakeholders to identify areas for improvement and implement changes to maintain a high level of satisfaction and engagement.

Trends

Trends



Trends Analysis (Groq AI)

Analyzing the trends in feature means across years reveals the following insights:

****Improving Features:****

1. ****Objectives_Met****: The mean has increased significantly from 1.53 in 2022 to 2.50 in 2024, indicating a substantial improvement in meeting objectives.
2. ****Venue_Rating****: The mean has increased from 0.98 in 2021 to 2.39 in 2024, showing a significant improvement in venue ratings.
3. ****Schedule_Rating****: The mean has increased from 1.49 in 2022 to 2.25 in 2024, indicating an improvement in schedule ratings.
4. ****Allowance_Rating****: The mean has increased from 1.52 in 2022 to 2.42 in 2024, showing an improvement in allowance ratings.
5. ****Speaker_Rating****: The mean has increased from 1.03 in 2021 to 2.45 in 2024, indicating a significant improvement in speaker ratings.

nt improvement in speaker ratings.

6. **Facilitator_Rating**: The mean has increased from 1.44 in 2022 to 2.43 in 2024, showing an improvement in facilitator ratings.

7. **Participant_Rating**: The mean has increased from 1.51 in 2022 to 2.38 in 2024, indicating an improvement in participant ratings.

Declining Features:

None of the features are declining. However, some features experienced a decline in 2022, but have since recovered and improved.

Stable Features:

None of the features are stable. All features have shown significant improvements over the years.

Actionable Insights:

1. **Continue to build on the momentum**: The improvements in all features suggest that the current strategies and initiatives are effective. Continue to build on this momentum to further improve the features.

2. **Analyze the decline in 2022**: Although the features have recovered, it's essential to analyze the decline in 2022 to identify the root causes and prevent similar declines in the future.

3. **Focus on consistent improvement**: With all features showing significant improvements, focus on consistent improvement to maintain the upward trend.

4. **Monitor and adjust**: Continuously monitor the features and adjust strategies as needed to ensure continued improvement.

Overall, the trend analysis indicates significant improvements in all features, suggesting that the current strategies and initiatives are effective. By continuing to build on this momentum and analyzing the decline in 2022, the features are likely to continue improving.