Restaurant Analysis Interpretation

Original Data

Restaurant	Service	Quality	Price
Restaurant 1	-2	3	-1
Restaurant 2	-1	1	0
Restaurant 3	2	-1	-1
Restaurant 4	1	3	2

Contribution to Variance Table (Simplified)

Restaurant	Axis 1 (%)	Axis 2 (%)
Restaurant 1	17.03	37.49
Restaurant 2	0.17	3.53
Restaurant 3	68.74	0.11
Restaurant 4	14.06	58.88

The Difference Between These Tables:

Quality of Representation:
Helps us know if we're "describing the restaurant well."
- Sum of values for each restaurant = 1 (or close to 1).
- Used to know if our analysis captures a restaurant's characteristics well.

Contribution to Variance:
Shows which restaurants are "defining" each axis.
- Sum of all contributions on each axis = 1 (or 100.%).
- Helps identify which restaurants are most influential in creating the patterns we see.

Interpretation of Each Table in Detail:

1. Quality of Representation Table:

```
Index | axe1   | axe2
------------------------
    1 | 0.3620 | 0.6098
    2 | 0.0230 | 0.3607
    3 | 0.9931 | 0.0012
    4 | 0.2373 | 0.7605
```

Interpretation:
- **Restaurant 3** (0.9931 on axe1):
Almost perfectly represented on the first axis.
This means its characteristics (good service, lower quality, lower price) are very well captured by the first principal component.

- **Restaurant 4** (0.7605 on axe2):
Well represented on the second axis. Its profile (good across all aspects) is best explained by the second component.
- **Restaurant 1** (0.6098 on axe2): Better represented on the second axis, suggesting its contrasting scores (high quality but poor service) are captured by this axis.
- **Restaurant 2**: Poorly represented on both axes (low values), indicating it's probably close to average in all aspects.

2. Contribution to Variance Table:

```
axe1 = 0.17031 (17.03%) - Rest 1
axe2 = 0.37487 (37.49%) - Rest 1
------------------------
axe1 = 0.00172 (0.17%)  - Rest 2
axe2 = 0.03528 (3.53%)  - Rest 2
------------------------
axe1 = 0.68740 (68.74%) - Rest 3
axe2 = 0.00107 (0.11%)  - Rest 3
------------------------
axe1 = 0.14055 (14.06%) - Rest 4
axe2 = 0.58876 (58.88%) - Rest 4
```

Interpretation:
- **Axis 1** is primarily defined by:
Restaurant 3 (68.74%): This restaurant strongly influences what Axis 1 represents.
Restaurant 1 (17.03%): Has some influence. * Other restaurants have minimal influence.

- **Axis 2** is mainly defined by:
Restaurant 4 (58.88%): Major influence on this axis.
Restaurant 1 (37.49%): Significant influence.
Restaurants 2 and 3 have very little influence.

Overall Conclusion:

- **Restaurant 3** dominates and defines Axis 1 (high contribution and representation).
- **Restaurants 1 and 4** together define Axis 2.
- **Restaurant 2** is not very influential in the analysis (low values in both tables).
- The analysis suggests we have two main patterns in our restaurants:
one captured by Restaurant 3's characteristics (Axis 1) and another by the combination of Restaurants 1 and 4's characteristics (Axis 2).