Business Advice for Cocktail Bar Owners

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Attribute Analysis-General Advice

- Try to provide a quiet environment.
- Avoid facilities making too much noise like TV.
- Avoid noisy music features like dj, jukebox.
- Try to create an intimate or romantic ambience, avoid a casual atmosphere.

General Advice

- Try to provide a quiet environment.
  ANOVA model shows that *NoiseLevel* is a significant predictor
  (p-value=2.9e-17). We apply Tukey's multiple comparison to
  different levels pf *NoiseLevel*, and we find that at 0.05 level, ratings
  for more quiet cocktail bars are higher than those with louder noise.
  Results are as below:

Group1	Group2	Mean Difference	p-value
Average	Loud	-0.1297	0.0113
Average	Very Loud	-0.7823	0.001
Loud	Very Loud	-0.6527	0.001
Quiet	Very Loud	-0.8377	0.001

Multiple Comparison on *NoiseLevel*.

General Advice

- Avoid facilities making too much noise like TV.
  ANOVA model also shows that *HasTV* is a significant predictor
  (p-value=4.4e-14). Tukey's test shows that ratings for bars with TV
  are 0.2696 less than those of bars without TV(p-value=0.001).

Group1	Group2	Mean Difference	p-value
Without TV	Has TV	-0.2696	0.001

Multiple Comparison on *HasTV*.

General Advice

- Avoid noisy music features like dj, jukebox, background music.
  We fit ANOVA model with different levels of *Music* as predictors and
  ratings as outcomes. It shows that *dj*, *background_music*, *jukebox*
  are significant. Then we apply Tukey's test, the results are as below:

Feature	Group1	Group2	Mean Difference	p-value
Background Music	False	True	-0.3759	0.0044
DJ	False	True	-0.5631	0.001
Jukebox	False	True	-0.2905	0.0234

Multiple Comparison on *Music*.

General Advice

- Try to create an intimate/romantic/hipster ambience, avoid a casual atmosphere.
  We fit ANOVA model with different levels of *Ambience* as predictors and ratings as outcomes. It shows that *intimate*, *romantic*, *hipster*, *casual* are significant. Then we apply Tukey's test, the results are as below:

Feature	Group1	Group2	Mean Difference	p-value
Intimate	False	True	0.1864	0.0013
Romantic	False	True	0.1455	0.0332
Hipster	False	True	0.1009	0.0489
Casual	False	True	0.1154	0.001

  Multiple Comparison on *Ambience*.

Review Analysis-Specific Advice

First, we used the results of TF-IDF in the preliminary analysis and divided the words into 4 categories: Service, Food, Drink and Place.

Service	Food	Drink	Place
Time	Chicken	Beer	Light
Staff	Cheese	Wine	Music
Bartender	Salad	Cocktail	Noisy
Waitress	Steak	Spirits	Temperature
Table	Delicious	Cheap	Live

Review Analysis-Specific Advice

According to Table 9, we selected nearly 20 keywords with high TF-IDF values, and used the following steps to make suggestions for specific bars:

1. Calculate the average rating of reviews containing specific keywords.
2. Calculate the average rating of reviews for each business containing specific keyword.
3. Perform a t-test on the two average ratings above. If the test result is statistically significant, it is considered that the business has room for improvement in a certain aspect, and specific suggestions are given.

Review Analysis-Example

Take **Detour 290** (business id = *oJjmM81g214TGKdmHNcjHQ*) as an example, the result of some t-tests that are statistically significant are shown as follows ($\alpha = 0.05$).

Keywords	Ratings of Detour	Ratings of All Bars	P-value
Service	2.33	3.82	0.00427
Bartender	2.00	4.58	0.00018
Drink	2.93	3.71	0.04558
Beer	2.67	3.88	0.02044
Place	3.01	3.90	0.00458

Review Analysis-Example

According to Table 11, we can give **Detour 290** the following advice:

1. Customers are not satisfied with the service of your bar, you may improve the rating in this aspect.
2. Hire more professional bartenders who are good at making cocktails and communicating with customers.
3. The quality of beer needs to be improved.
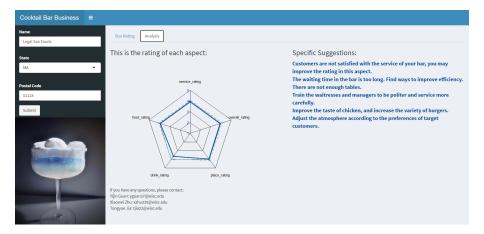4. Adjust the atmosphere according to the preferences of target customers.

Outline

Shiny

link

Conclusion

Through the statistical analysis of the review texts and attributes, we found that the noise level and the ambience is the key factor affecting the star rating. In addition, we analysed the key words of each cocktail bar and rated five aspects which are generally believed to be critical to the bar business.