Tasks

Learners have to develop a dashboard to support the answers to the following questions and suggestions for places for newer restaurants.

Objective Questions:

1. **What is the total no. of tables present in the data?**

   A total of 2 tables are present in the original data:

   (1) Raw Data, and (2) Country Description.

2. **What is the total no. of attributes present in the data?**

   A total of 22 attributes (20 in the Raw Data, and 2 in the Country Description) are present in the original data.

3. **How many categorical columns are there in the data? [Search about categorical and continuous data, and try to answer this question]**

   A total of 18 categorical columns are present in the original data.

Raw Data		Country Description	
Categorical columns	Continuous columns	Categorical columns	Continuous columns
RestaurantID	Longitude	Country Code	
RestaurantName	Latitude	Country Name	
CountryCode	Votes		
City	Average_Cost_for_two		
Address			
Locality			
LocalityVerbose			
Cuisines			
Currency			
Has_Table_booking			
Has_Online_delivery			
Is_delivering_now			
Switch_to_order_menu			
Price_range			
Rating			
Datekey_Opening			

4. **The data consists of some inconsistent and missing values so ensure that the data used for further analysis is cleaned.**

   Duplicate Checkup: No duplicates were found on the basis of unique identifier RestaurantID.

   White Spaces: Trimmed whitespaces from 170 cells.

   Find and Fill Missing Values:
   Checked for blank values in each attribute using *COUNTBLANK()* function

   (1) Cuisines: 9 USA restaurants had missing values for their Cuisines, I filled them with the most served cuisine in the country (Mexican cuisine, offered by 25 restaurants)

   (2) Longitude & latitude: Values of both attributes were written as 0 for 497 restaurants, mostly Indian restaurants. Replaced them with the average coordinates of all restaurants in their locality using *VLOOKUP()* function, without considering 0 in the average calculation.

   (3) Average_Cost_for_Two: 15 restaurants had values set as 0. Created a pivot table to find average costs for each city. Replaced the inconsistent values using *VLOOKUP()* function.

   Extracted information:

   (1) *Year, Month, Day* from the *Datekey_opening* column.

   (2) Age of restaurants (*Age_years* column) from the date of opening.

   (3) *Votes_per_year* column (calculated by =*votes/age_years*)

   (4) Costs in US Dollar (*Avg_cost_for_two_USD* column).

5. **Using the LookUp functions, fill up the countries in the original data using the country code.**

   I added a new column called *'Country'* to the original dataset. I then used the *VLOOKUP()* function to automatically fill this column with the correct country names by matching the country codes from our data with the complete country names in the 'Country Description' reference table.

6. **Create a table to represent the number of restaurants opened in each country.**

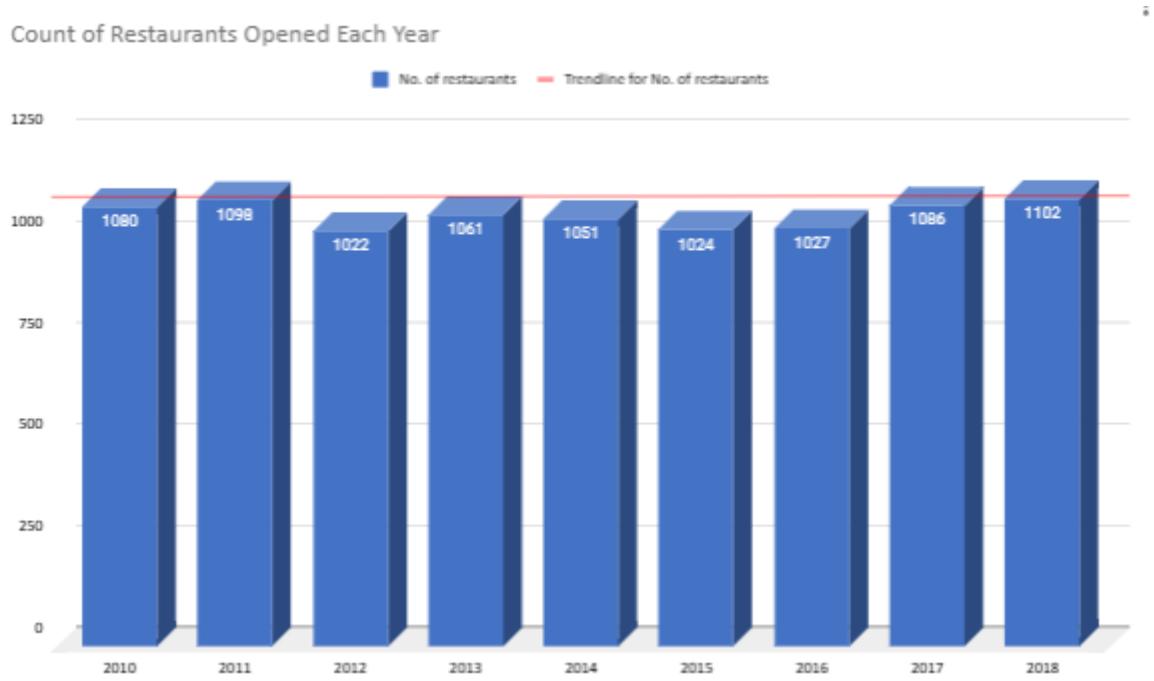
I created a pivot table that shows the total count of restaurants by country.

This table clearly displays how many restaurants from the dataset are located in each country, allowing us to see which countries have the highest restaurant presence.

Country	No. of restaurants
Australia	24
Brazil	60
Canada	4
India	8652
Indonesia	21
New Zealand	40
Philippines	22
Qatar	20
Singapore	20
South Africa	60
Sri Lanka	20
Turkey	34
United Arab Emi	60
United Kingdom	80
United States of	434
Grand Total	**9551**

7. **Also, the management wants to look at the number of restaurants opened each year, so provide them with something here.**

   I created a column chart that displays the number of restaurants opened per year. This visualization makes it easy to identify trends in restaurant openings over time and quickly spot which years had the highest and lowest number of new establishments.



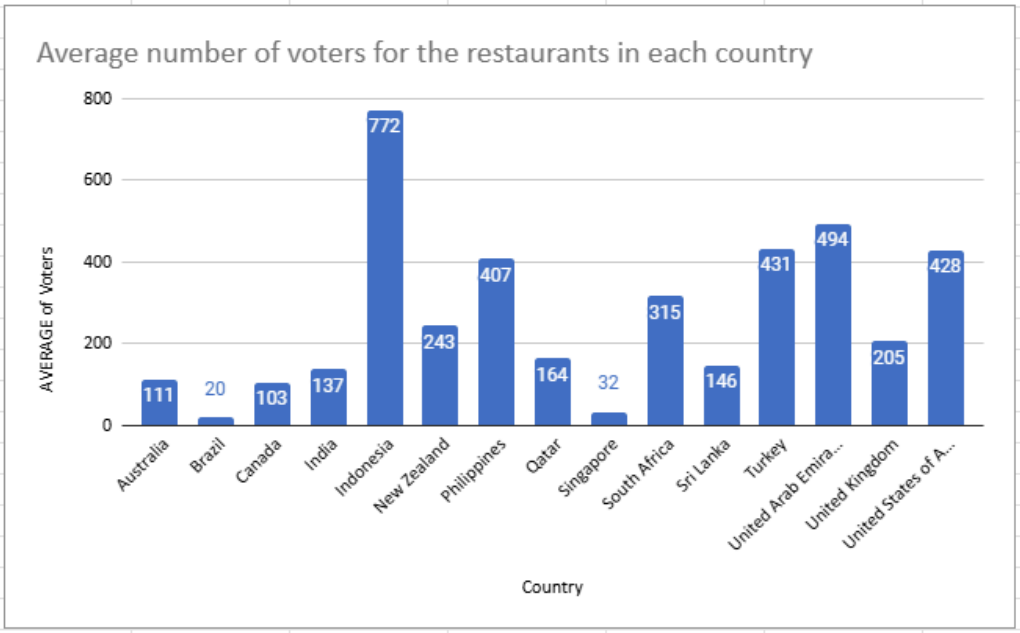
8. **What is the total number of restaurants in India in the price range of 4?**

   I created a pivot table to analyze the data and found that there are 388 restaurants in India that fall within the highest price range (4).

India	
Price_range	No. of restaurants
4	388

9. **What is the average number of voters for the restaurants in each country according to the data?**

   I created a column chart that shows the average number of voters (or votes) per restaurant for each country in the dataset. This visualization helps identify which countries have restaurants with higher engagement levels from diners.



10. **Calculate the average rating for all the restaurants that have price_range < 4 and provide online delivery. Use only the "IF" function, Logical Operators, and Aggregation functions to solve this problem. [Note: Don't use Conditional aggregation in this question.]**

    I calculated that restaurants with a price range below 4 that also offer online delivery have an average rating of 3.27.

Average rating for all the restaurants that have **price_range < 4** and **provide online delivery**
3.27

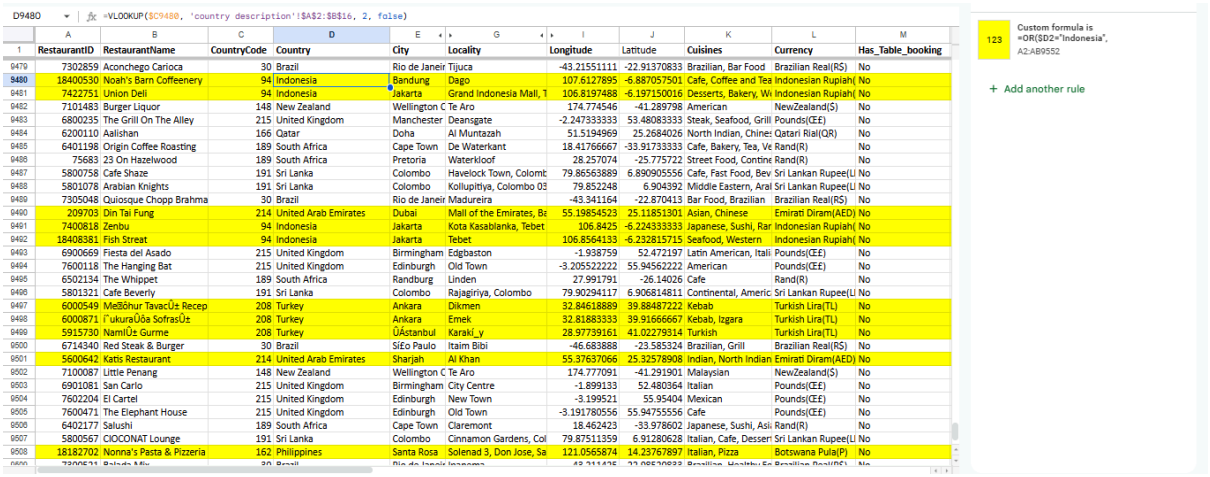
    The formula I used combines logical operators with IF and AVERAGE functions:

    =ArrayFormula(AVERAGE(IF(('Raw Data'!$N$2:$N="Yes")('Raw Data'!$Q$2:$Q<4), 'Raw Data'!$W$2:$W)))*

11. **Using Conditional formatting highlight the rows of restaurants that are located in the countries or cities that you've suggested to the management for opening new restaurants.**

    The rows of restaurants were highlighted using conditional formatting to visually identify those located in the countries or cities that our data analysis suggested as promising locations for opening new restaurants.

These suggested locations were selected based on our analysis of lower competition and higher customer engagement, further refined by considering the average price range in those areas.



	RestaurantID	RestaurantName	CountryCode	Country	City	Locality	Longitude	Latitude	Cuisines	Currency	Has_Table_booking
9479	7302859	Aconchego Carioca	30	Brazil	Rio de Janeir	Tijuca	-43.21551111	-22.91370833	Brazilian, Bar Food	Brazilian Real(R$)	No
9480	18400530	Noah's Barn Coffeenery	94	Indonesia	Bandung	Dago	107.6127895	-6.887057501	Cafe, Coffee and Tea	Indonesian Rupiah(	No
9481	7422751	Union Deli	94	Indonesia	Jakarta	Grand Indonesia Mall, T	106.8197488	-6.197150016	Desserts, Bakery, We	Indonesian Rupiah(	No
9482	7101483	Burger Liquor	148	New Zealand	Wellington C	Te Aro	174.774546	-41.289798	American	NewZealand($)	No
9483	6800235	The Grill On The Alley	215	United Kingdom	Manchester	Deansgate	-2.247333333	53.48083333	Steak, Seafood, Grill	Pounds(C£)	No
9484	6200110	Aalishan	166	Qatar	Doha	Al Muntazah	51.5194969	25.2684026	North Indian, Chine	Qatari Rial(QR)	No
9485	6401198	Origin Coffee Roasting	189	South Africa	Cape Town	De Waterkant	18.41766667	-33.91733333	Cafe, Bakery, Tea, Ve	Rand(R)	No
9486	75683	23 On Hazelwood	189	South Africa	Pretoria	Waterkloof	28.257074	-25.775722	Street Food, Contine	Rand(R)	No
9487	5800758	Cafe Shaze	191	Sri Lanka	Colombo	Havelock Town, Colombo	79.86563889	6.890905556	Cafe, Fast Food, Bev	Sri Lankan Rupee(LI	No
9488	5801078	Arabian Knights	191	Sri Lanka	Colombo	Kollupitiya, Colombo 03	79.852248	6.904392	Middle Eastern, Aral	Sri Lankan Rupee(LI	No
9489	7305048	Quiosque Chopp Brahma	30	Brazil	Rio de Janeir	Madureira	-43.341164	-22.870413	Bar Food, Brazilian	Brazilian Real(R$)	No
9490	209703	Din Tai Fung	214	United Arab Emirates	Dubai	Mall of the Emirates, Ba	55.19854523	25.11851301	Asian, Chinese	Emirati Diram(AED)	No
9491	7400818	Zenbu	94	Indonesia	Jakarta	Kota Kasablanka, Tebet	106.8425	-6.224333333	Japanese, Sushi, Rar	Indonesian Rupiah(	No
9492	18408381	Fish Street	94	Indonesia	Jakarta	Tebet	106.8564133	-6.232815715	Seafood, Western	Indonesian Rupiah(	No
9493	6900669	Fiesta del Asado	215	United Kingdom	Birmingham	Edgbaston	-1.938759	52.472197	Latin American, Itali	Pounds(C£)	No
9494	7600118	The Hanging Bat	215	United Kingdom	Edinburgh	Old Town	-3.205522222	55.94562222	American	Pounds(C£)	No
9495	6502134	The Whippet	189	South Africa	Randburg	Linden	27.991791	-26.14026	Cafe	Rand(R)	No
9496	5801321	Cafe Beverly	191	Sri Lanka	Colombo	Rajagiriya, Colombo	79.90294117	6.906814811	Continental, Americ	Sri Lankan Rupee(LI	No
9497	6000549	Meßöhur TavacÛ± Recep	208	Turkey	Ankara	Dikmen	32.84618889	39.88487222	Kebab	Turkish Lira(TL)	No
9498	6000871	Ï¨ukuraÛöa SofrasÛ±	208	Turkey	Ankara	Emek	32.81883333	39.91666667	Kebab, Izgara	Turkish Lira(TL)	No
9499	5915730	NamlÜ± Gurme	208	Turkey	ÜÂstanbul	Karaki_y	28.97739161	41.02279314	Turkish	Turkish Lira(TL)	No
9500	6714340	Red Steak & Burger	30	Brazil	SiÊo Paulo	Itaim Bibi	-46.683888	-23.585324	Brazilian, Grill	Brazilian Real(R$)	No
9501	5600642	Katis Restaurant	214	United Arab Emirates	Sharjah	Al Khan	55.37637066	25.32578908	Indian, North Indian	Emirati Diram(AED)	No
9502	7100087	Little Penang	148	New Zealand	Wellington C	Te Aro	174.777091	-41.291901	Malaysian	NewZealand($)	No
9503	6901081	San Carlo	215	United Kingdom	Birmingham	City Centre	-1.899133	52.480364	Italian	Pounds(C£)	No
9504	7602204	El Cartel	215	United Kingdom	Edinburgh	New Town	-3.199521	55.95404	Mexican	Pounds(C£)	No
9505	7600471	The Elephant House	215	United Kingdom	Edinburgh	Old Town	-3.191780556	55.94755556	Cafe	Pounds(C£)	No
9506	6402177	Salushi	189	South Africa	Cape Town	Claremont	18.462423	-33.978602	Japanese, Sushi, Asi	Rand(R)	No
9507	5800567	CIOCONAT Lounge	191	Sri Lanka	Colombo	Cinnamon Gardens, Col	79.87511359	6.91280628	Italian, Cafe, Dessert	Sri Lankan Rupee(LI	No
9508	18182702	Nonna's Pasta & Pizzeria	162	Philippines	Santa Rosa	Solenad 3, Don Jose, Sa	121.0565874	14.23767897	Italian, Pizza	Botswana Pula(P)	No

The formula used for this conditional formatting is:

=OR($D2="Indonesia", $D2="Philippines", $D2="Turkey", $D2="United Arab Emirates")

This conditional formatting formula is designed to highlight rows of restaurants located in countries (Indonesia, Philippines, Turkey, or United Arab Emirates) that have been recommended for new restaurant openings.

Because all the suggested cities (Bogor, Jakarta, Tangeran, Makati City, Pasay City, Pasig City, Quezon City, San Juan City, Tagaytay City, Taguig City, Istanbul, and Dubai) are located within these countries, this formula will automatically highlight restaurants in those cities as well as any other restaurants located within these recommended countries.

12. **Create a new customized price column that consists of the abbreviation/symbol of the currency along with the Average_cost_for_two value. [Use string operations to do this task]**

I created a new column called *'Average_cost_for_two_withCurrency'* that combines the currency symbol with the price value.

For example, if the currency is "USD" and the price is 25, the new column would show "$25".

Formula used for this operation is:

=CONCAT(LEFT(RIGHT($L2, LEN($L2)-FIND("(", $L2)), LEN(RIGHT($L2, LEN($L2)-FIND("(", $L2)))-1), $T2)

13. **How can you create an array formula in Excel or Google Sheets to count the number of restaurants listed that do not offer online delivery, are in the lowest price range, and have an average cost for two people less than or equal to 250 Indian Rupees?**

    There are **1676** restaurants listed that meet the following criteria:

    - Do not offer online delivery
    - Are in the lowest price range
    - Have average cost for two ≤ 250 Indian Rupees

    This count was determined using the following array formula in Google Sheets:

    =ArrayFormula(COUNTIF(('Raw Data'!N2:N="No")('Raw Data'!Q2:Q=MIN('Raw Data'!Q2:Q))*('Raw Data'!AB2:AB<=250), 1))*

Subjective Question:

1. **Suggest a few countries where the team can open newer restaurants with lesser competition. Which visualization/technique will you use here to justify the suggestions?**

   To find the best countries to open new restaurants, I looked for countries that don't have too many restaurants already. At the same time, I wanted to find countries where people really like to go to restaurants. This way, new restaurants will have less competition and a better chance to be successful.

Country	No. of Restaurants	Engagement Score	Avg_Price_range	E.S./Avg_Price_range
Indonesia	21	8.4	3.0	2.9
New Zealand	40	2.7	3.2	0.9
Philippines	22	4.1	3.4	1.2
South Africa	60	3.6	3.6	1.0
Turkey	34	5.1	2.8	1.8
United Arab Emi	60	5.2	3.2	1.6
United Kingdom	80	2.4	2.8	0.9

   Method: Pivot table analysis focusing on countries with:

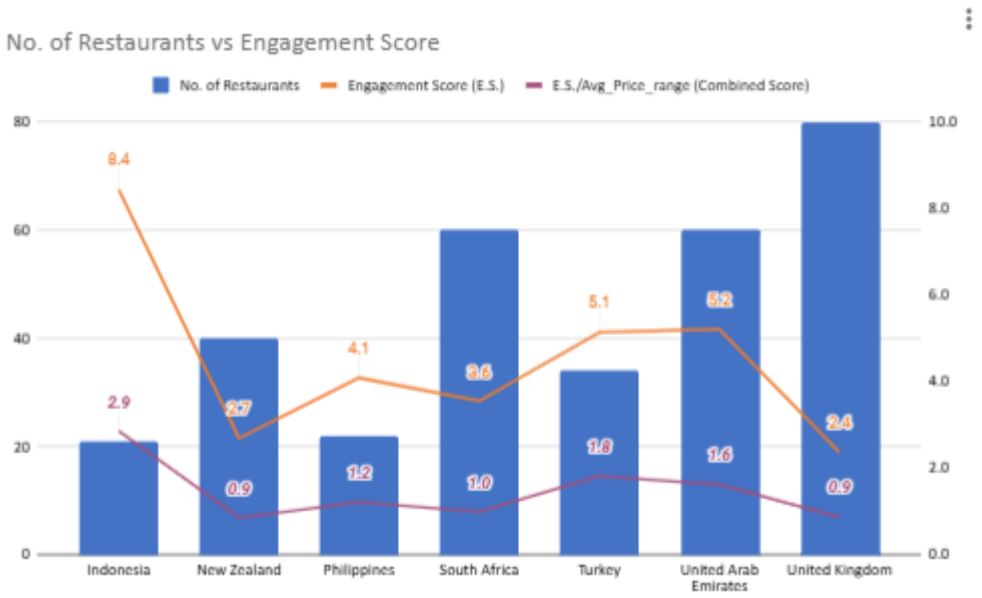
   - **Low Restaurant Count:** 80 or fewer restaurants.
   - **High Engagement Score:** >= 2 (calculated as normalized yearly votes per restaurant).

   Engagement Score (ES): Measures customer interest: (Total Yearly Votes / Number of Restaurants) / 10.

   Price Consideration: Higher average price range considered beneficial for profitability.

   Refined Selection: Countries highlighted with an "E.S. / Average Price Range" score of >= 1.

   Visualization: Combo chart used to show restaurant count, Engagement Score, and Combined Score for easy comparison.



Recommended Countries: ***Indonesia, Philippines, Turkey, and United Arab Emirates*** - offer lower competition and higher customer engagement.

2. **Come up with the names of States and cities in the suggested countries suitable for opening restaurants.**

Country	City	No. of Restaurants	Engagement Score	Avg_Price_range	Avg_Rating	E.S. / Avg_Price_range
Indonesia	Bandung	1	0.2	3.0	4.2	0.1
	Bogor	2	9.4	2.5	3.9	3.7
	Jakarta	16	8.2	3.0	4.4	2.7
	Tangerang	2	13.6	3.0	4.3	4.5
Philippines	Makati City	2	3.9	3.0	4.7	1.3
	Mandaluyong Ci	4	2.1	3.8	4.6	0.6
	Pasay City	3	5.6	4.0	4.4	1.4
	Pasig City	3	6.2	3.0	4.6	2.1
	Quezon City	1	4.2	3.0	4.8	1.4
	San Juan City	2	5.7	3.0	4.3	1.9
	Santa Rosa	2	0.4	3.0	3.8	0.1
	Tagaytay City	1	3.0	3.0	4.5	1.0
	Taguig City	4	4.8	3.5	4.5	1.4
Turkey	Ankara	20	1.4	2.8	4.3	0.5
	ÜÁstanbul	14	10.5	2.9	4.3	3.7
United Arab E	Abu Dhabi	20	2.9	3.3	4.3	0.9
	Dubai	20	10.3	3.1	4.4	3.4
	Sharjah	20	2.6	3.3	4.0	0.8

To find the best cities for new restaurants in our chosen countries, I used a simple method. I made a table and looked at all the cities in Indonesia, Philippines, Turkey, and the United Arab Emirates.

Then, I picked out the cities that looked most promising for new restaurants based on a special score I created ("ES/Avg_price_range"). I highlighted

these top cities in green in my table. These green-highlighted cities are the ones where it seems most suitable to open new restaurants.

These cities are:

Indonesia: Bogor, Jakarta, Tangerang

Philippines: Makati City, Pasay City, Pasig City, Quezon City, San Juan City, Tagaytay City, Taguig City

Turkey: ÛÁstanbul

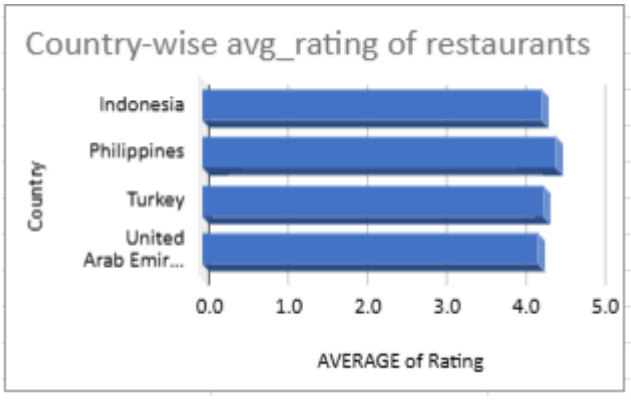
United Arab Emirates: Dubai

3. **According to the countries you suggested, what is the current quality regarding ratings for restaurants that are open there?**

To understand the current quality of restaurants in the recommended countries, we looked at customer ratings. We used a pivot table to calculate the average rating for restaurants in each country (Indonesia, Philippines, Turkey, and United Arab Emirates).

Country	AVERAGE of Rating
Indonesia	4.3
Philippines	4.5
Turkey	4.3
United Arab Emi	4.2

Then, to easily see and compare these average ratings, we created a bar chart. This chart visually shows the average restaurant rating for each of the suggested countries. By looking at the height of the bars, we can quickly see how customers generally rate restaurants in each of these countries.

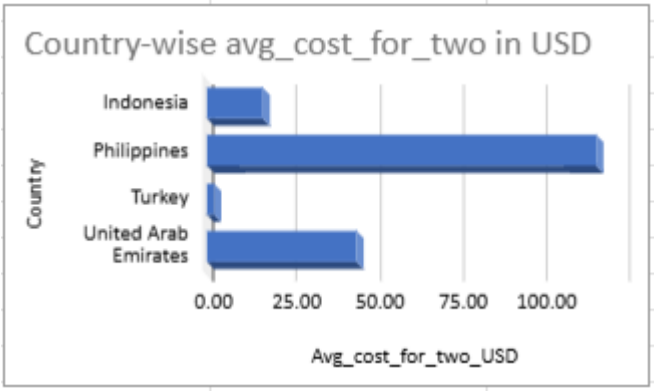


The average restaurant ratings for all suggested countries—Indonesia, Philippines, Turkey, and United Arab Emirates—are above 4 out of 5.

This indicates that the general quality and customer satisfaction levels of existing restaurants in these countries are already quite good. Therefore, to successfully compete in these markets, new restaurants will need to focus on offering even better food, service, and overall dining experiences to attract customers and stand out.

4. **Also, what is the current expenditure on food in the suggested countries, so we can keep our financial expenditure in control?**

   I used a pivot table to calculate this average cost for each country and then displayed it in a column chart.



   Looking at the chart, we can see the average cost for a meal for two people in USD:

   - **Philippines** has the highest average cost, appearing to be around $115 USD.

   - **United Arab Emirates** has a moderate average cost, around $50 USD.

   - **Indonesia** and **Turkey** have the lowest average costs, both appearing to be under $25 USD.

   If cost is a major concern, then Indonesia and Turkey might be more financially conservative markets to enter compared to the Philippines, which has a significantly higher average dining cost.

   The United Arab Emirates falls in the mid-range for expenditure.

5. **Come up with the names of restaurants from the recommended states that are our biggest competitors and also those that are rated in the lower brackets, i.e. 1-2 or 2-3.**

   To identify our biggest competitors in the recommended cities, I looked for restaurants that are popular (based on the number of votes they receive) and have high ratings. For each city, I listed up to two of the top restaurants that fit this description as our main competitors.

City	RestaurantName	Avg_rating	Market Share (city-wise)
Bogor	Lemongrass	4.0	47.67%
Dubai	AB's Absolute Barbecues	4.9	23.19%
	Tresind - Nassima Royal Hotel	4.9	9.40%
Jakarta	Talaga Sampireun	4.9	29.89%
	Union Deli	4.6	11.48%
Makati City	Izakaya Kikufuji	4.5	54.75%
	Le Petit Souffle	4.8	45.25%
Pasay City	Spiral - Sofitel Philippine Plaza Manila	4.9	30.99%
	Vikings	4.2	45.05%
Pasig City	Silantro Fil-Mex	4.9	57.63%
San Juan City	Guevarra's	4.2	67.25%
Tagaytay City	Balay Dako	4.5	100.00%
Taguig City	NIU by Vikings	4.7	27.88%
	Wildflour Cafe + Bakery	4.4	34.05%
Tangerang	Talaga Sampireun	4.9	90.49%
ÛÁstanbul	J'adore Chocolatier	4.7	11.10%
	Karakí_y Gí_llí_oÛôlu	4.7	11.04%

   Separately, I also wanted to find restaurants that are rated lower, as these might represent areas where we could improve and offer something better. I looked for restaurants with ratings between 1 and 4 stars.

Grouped Rating	City	RestaurantName	Rating
3 - 4	Bogor	Lemongrass	4
		Momo Milk	3.7
	Dubai	Applebee's	3.7
		Red Lobster	3.2
		The Farm	3.9
	Jakarta	Fish Streat	3.7
		OJJU	3.9
	Pasay City	Buffet 101	4
	Tangerang	Onokabe	3.7
	ÛÁstanbul	A⊡ô⊡ôk Kahve	4
		Huqqa	3.7
		Leman Kí_ltí_r	3.7
		Walter's Coffee Roastery	4

Interestingly, I found that there were no restaurants with ratings below 3 stars in our dataset. The restaurants with lower ratings actually fell in the 3-4 star range. This means that even the lower-rated restaurants are still reasonably well-regarded, suggesting a generally competitive market.

6. **Which cuisines should we focus on in the newer restaurants to get better feedback? Does the choice of cuisines affect the restaurant ratings?**

To determine the best cuisines to focus on in new restaurants, I analyzed the most popular and highly-rated cuisines in each of our suggested countries. I created a table showing the top cuisines in Indonesia, Philippines, Turkey, and the United Arab Emirates, based on customer votes and ratings.

Country	*Cuisines*	Votes	Avg_rating
Indonesia	Sunda, Indonesian	5514	4.9
	Cafe, Italian, Coffee and Tea, Western, Indonesian	1476	4.6
	Desserts, Bakery, Western	903	4.6
	Asian, Indonesian, Western	873	4.6
	Sushi, Japanese	605	4.9
Philippines	Filipino, Mexican	1364	4.9
	Filipino	743	4.7
	European, Asian, Indian	621	4.9
	American, Asian, Italian, Seafood	618	4.5
	Japanese	591	4.5
	Seafood, American, Mediterranean, Japanese	535	4.7
	Japanese, Sushi	365	4.9
	French, Japanese, Desserts	314	4.8
	Japanese, Korean	229	4.8
	Cafe, Korean, Desserts	118	4.5

Turkey	Cafe	1803	4.7
	Desserts	1311	4.7
	Desserts, Bí_rek	1305	4.7
	Bar Food	522	4.9
	Kebab	355	4.6
	Kebab, Turkish Pizza	109	4.6
	Pizza	104	4.7
	World Cuisine	95	4.9
United Arab E	American, Desserts	3010	4.7
	Indian, Continental	2510	4.8
	Indian	1875	4.8
	American, Burger	1388	4.5
	Indian, North Indian	982	4.7
	International, Indian	909	4.5
	Continental, Indian	641	4.9
	American	583	4.6
	Cafe	403	4.5
	Filipino, Japanese, Asian	162	4.5
	Cafe, Bakery, Desserts	143	4.5
	Asian	81	4.6

Here are the top cuisines for each country that we should consider:

- **Indonesia:** Indonesian, Western
- **Philippines:** Filipino, Mexican, Asian, Japanese
- **Turkey:** Cafe, Desserts, Bar Food
- **United Arab Emirates:** American, Desserts, Indian, Continental

Does cuisine choice affect restaurant ratings?

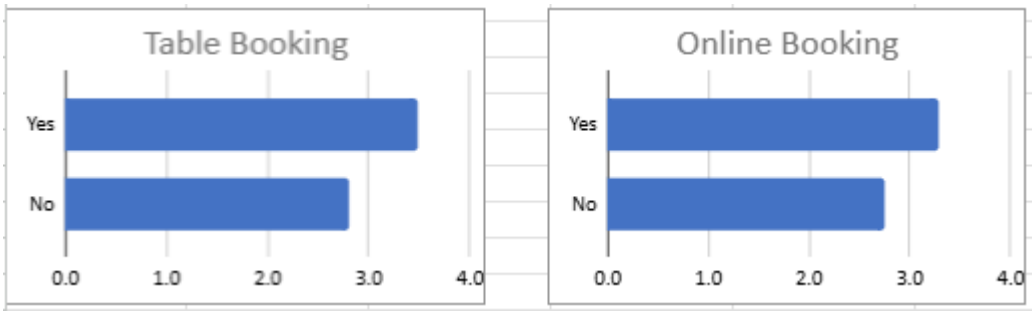
Yes, absolutely. The type of cuisine a restaurant offers significantly impacts its ratings. This is because people's tastes and preferences vary greatly depending on their culture, background, and personal experiences. What is considered delicious and satisfying in one country might be less popular in another. Therefore, choosing cuisines that are well-loved and in demand within each specific country is crucial for achieving higher customer satisfaction and better restaurant ratings.

7. **According to our current data, should we go for online delivery and table booking? Does that affect the customer's ratings?**

   To understand if online delivery and table booking are important, I looked at restaurant ratings. I made two charts:

- **Online Delivery:** I compared ratings of restaurants that offer online delivery with those that don't.

- **Table Booking:** I also compared ratings of restaurants that offer table booking with those that don't.



Here's what I found:

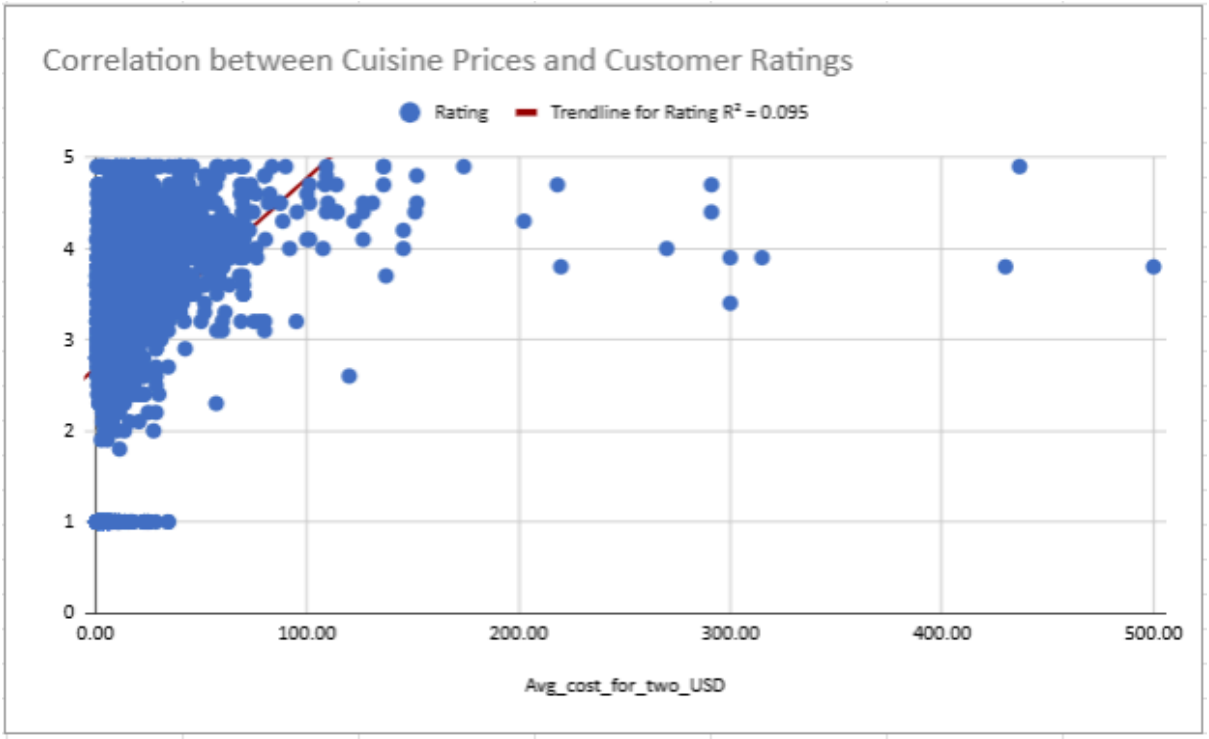
- **Table Booking Matters**: Restaurants that allow customers to book tables tend to have higher ratings (average of 3.5 stars) compared to those without table booking (average of 2.8 stars).

- **Online Delivery Matters**: Restaurants that offer online delivery also tend to have higher ratings (average of 3.3 stars) compared to those that don't offer delivery (average of 2.8 stars).

This suggests that **offering both table booking and online delivery can positively impact customer satisfaction** and lead to better restaurant ratings.

8. **Should the team keep the rate of cuisines higher? Will that affect the feedback? According to our data are the rates of cuisines and ratings, correlated?**

   To see if we should charge more for our cuisines to get better reviews, I looked at how prices and ratings are related. I made a scatter plot that compared the price of cuisines (in US dollars) with the average ratings restaurants get.



Key Observations:

- The R^2 value of 0.095 indicates a very weak positive correlation.
- Many restaurants cluster are in the lower price range (under $100)
- Ratings span the full range (1-5) at lower price points.
- Higher-priced restaurants (>$200) tend to avoid the lowest ratings, but they don't always get the best ratings either.
- There's no strong pattern showing expensive restaurants consistently getting better ratings

What this means for our business:

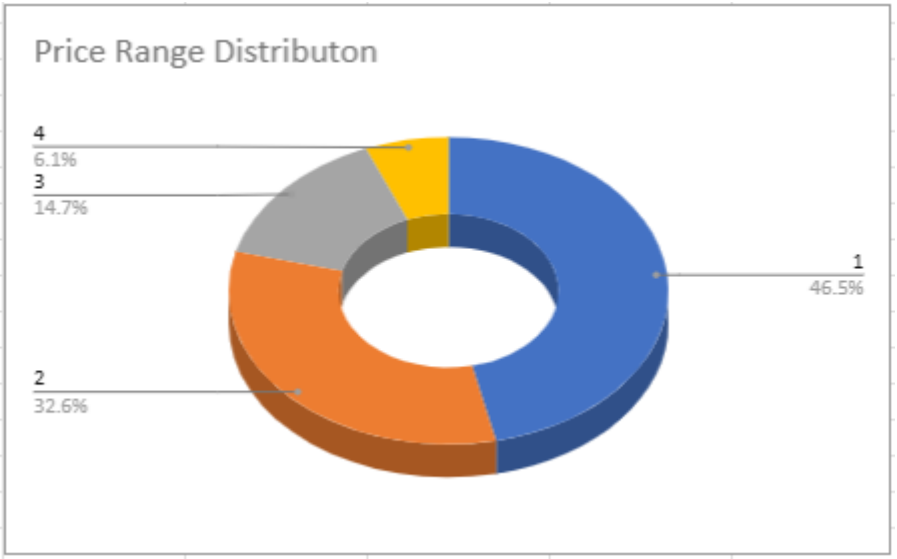
- **Don't Just Raise Prices:** Simply charging more money is not a reliable way to get better customer ratings.
- **Focus on Other Things:** Things other than price are probably much more important for making customers happy.
- **Keep Prices Reasonable:** We shouldn't assume that higher prices will automatically mean better feedback. We should focus on other ways to improve our restaurants besides just raising prices.

In addition to the scatter plot analysis, I also calculated the correlation coefficient between cuisine prices (in USD) and average restaurant ratings.

CORREL
0.31

The correlation coefficient is 0.31, which confirms that there is **a weak positive linear relationship** between price and ratings. This numerical value further supports the observation that while there might be a slight tendency for higher-priced cuisines to have somewhat better ratings, the connection is not strong and other factors are likely more influential on customer feedback.

9. **What is the distribution of the number of restaurants of different price ranges in all the countries?**



Based on the distribution of restaurant price ranges, here are some recommendations:

Most Common Prices: Most restaurants are in the cheaper and mid-range price categories (ranges 1 and 2). You might get more customers by opening a restaurant in these ranges.

Fewer Expensive Options: There aren't as many restaurants in the higher price ranges (3 and 4). You could have less competition if you open a more expensive restaurant, but make sure enough people will want to pay those prices.

Tailor Strategy to Specific Countries: Individual countries might have different price range distributions. If you have country-specific data, tailor your pricing strategy to the local market conditions and customer preferences in each recommended country.

Focus on Value Proposition: Whatever price you choose, make sure your food and service are good for that price. Customers want to feel they are getting their money's worth.

Do More Research: This information gives a general idea. You should still research the prices people are willing to pay in each specific country and city.

10. **Explain your approach in brief for suggesting countries/cities in order to open new restaurants, if the objective and subjective questions would have not been given to assist you. [you have to give bullet pointers in order to answer this question]**

Here's my approach to suggest countries for opening new restaurants:

Country	No. of Restaurants	Avg_Rating	Avg_Price_range	SUM of Votes_per_year	Normalized Yearly Votes per Restaurant (/10)	Avg_cost_for_two_USD
Canada	4	3.6	2.5	41	1.01	36.25
Qatar	20	4.1	3.7	320	1.60	61.47
Singapore	20	3.6	3.7	66	0.33	155.75
Sri Lanka	20	3.9	2.9	305	1.53	8.07
Indonesia	21	4.3	3.0	1772	8.44	17.19
Philippines	22	4.5	3.4	900	4.09	116.94
Australia	24	3.7	2.1	282	1.17	24.08
Turkey	34	4.3	2.8	1749	5.14	2.33
New Zealand	40	4.3	3.2	1078	2.69	39.86
Brazil	60	3.8	3.4	121	0.20	23.58
South Africa	60	4.2	3.6	2133	3.55	22.76
United Arab Emi	60	4.2	3.2	3135	5.23	45.35
United Kingdom	80	4.1	2.8	1898	2.37	60.52
United States of	434	4.0	2.0	19504	4.49	26.67
India	8652	2.8	1.7	124819	1.44	7.17

- **Start with Country Competition:** First, I'd look at how many restaurants are in each country to understand the competition level.

- **Identify Low Competition:** I'd set a limit for what "low competition" means – in this case, countries with 80 or fewer restaurants. This was based on noticing that India and the USA had significantly more restaurants than other countries.

- **Measure Customer Interest (Engagement):** Just having few restaurants isn't enough. I'd also want to know if people are interested in dining out. To measure this, I'd calculate "Engagement Score" per country.

- **Engagement Score Calculation:** This score is based on yearly restaurant votes divided by the number of restaurants, then normalized by dividing by 10 to make it easier to compare. This shows how much activity there is per restaurant.

- **Focus on High Engagement, Low Competition:** I'd then look for countries that meet *both* criteria: low restaurant count (<= 80) and a good Engagement Score (>= 2).

PIVOT TABLE: Countries where **no. of restaurants <=80** and **restaurant engagement score >=2**

Country	No. of Restaurants	Engagement Score	Avg_Price_range	E.S./Avg_Price_range
Indonesia	21	8.4	3.0	2.9
New Zealand	40	2.7	3.2	0.9
Philippines	22	4.1	3.4	1.2
South Africa	60	3.6	3.6	1.0
Turkey	34	5.1	2.8	1.8
United Arab Emi	60	5.2	3.2	1.6
United Kingdom	80	2.4	2.8	0.9

- **Consider Price Range for Better Selection:** To narrow down the choices further, I'd also factor in the average price range of restaurants in each country. Higher price ranges can be more profitable.

- **Create a Combined Score:** To get a final ranking, I'd divide the Engagement Score by the average price range. This gives a (**E.S./Avg_Price_range**) score that balances customer interest with potential profitability.

- **Final Country Selection:** I'd select countries with this combined score above a certain level (in this case, >= 1).

Country	No. of Restaurants	Engagement Score	Avg_Price_range	E.S./Avg_Price_range
Indonesia	21	8.4	3.0	2.9
New Zealand	40	2.7	3.2	0.9
Philippines	22	4.1	3.4	1.2
South Africa	60	3.6	3.6	1.0
Turkey	34	5.1	2.8	1.8
United Arab Emi	60	5.2	3.2	1.6
United Kingdom	80	2.4	2.8	0.9

This led to the recommendation of *Indonesia, Philippines, Turkey, and United Arab Emirates.*

My approach for suggesting cities within these countries was also the same:

Country	City	No. of Restaurants	Engagement Score	Avg_Price_range	Avg_Rating	E.S. / Avg_Price_range
Indonesia	Bandung	1	0.2	3.0	4.2	0.1
	Bogor	2	9.4	2.5	3.9	3.7
	Jakarta	16	8.2	3.0	4.4	2.7
	Tangerang	2	13.6	3.0	4.3	4.5
Philippines	Makati City	2	3.9	3.0	4.7	1.3
	Mandaluyong Ci	4	2.1	3.8	4.6	0.6
	Pasay City	3	5.6	4.0	4.4	1.4
	Pasig City	3	6.2	3.0	4.6	2.1
	Quezon City	1	4.2	3.0	4.8	1.4
	San Juan City	2	5.7	3.0	4.3	1.9
	Santa Rosa	2	0.4	3.0	3.8	0.1
	Tagaytay City	1	3.0	3.0	4.5	1.0
	Taguig City	4	4.8	3.5	4.5	1.4
Turkey	Ankara	20	1.4	2.8	4.3	0.5
	ÛÁstanbul	14	10.5	2.9	4.3	3.7
United Arab E	Abu Dhabi	20	2.9	3.3	4.3	0.9
	Dubai	20	10.2	3.1	4.4	3.4
	Sharjah	20	2.6	3.3	4.0	0.8

- For suggesting specific cities within Indonesia, Philippines, Turkey, and the United Arab Emirates, I selected cities within these countries that also met the criteria of **ES/Avg_price_range >= 1**, ensuring that the recommended cities also exhibit a balance of good customer engagement relative to their average price range.

- This led to the recommendation of *Bogor, Jakarta, Tangeran, Makati City, Pasay City, Pasig City, Quezon City, San Juan City, Tagaytay City, Taguig City, ÛÁstanbul, Dubai.*

The dashboard must consist of Year-wise and country slicers.