**TASK**

**Objective Questions**:

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

Ans: There are **two** tables present in the data **(cleaned data and Country Description)**

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

Ans: There are total **31** attributes in the data **( 26 attribute in Cleaned data and 5 attribute in country description)**

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

Ans:

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

Ans: **City Name Modification:**

1. **Changed city names to “Sao Paulo” and “Istanbul”.**
2. **Restaurant name adjustment:**
3. **Replaced special character i© to ‘e’**
4. **Replaced special character i© to ‘e’**
5. **Removed special character ‘#’**
6. **Removed U+**
7. **Locality Modification:**
8. **Removed special character “±”.**
9. **Date key Opening Format:**
10. **Replaced underscores with ‘-‘ and converted the format to a date.**
11. **Change the header formating:**
12. **Made a space between the word where it is necessary.**
13. **Replace ‘-‘ with the space between then two words.**
14. **Average cost for two updating work:**
15. **After looking the average cost for column I found that is some ‘0’ value of food. So ‘0’ is replaced by average of all food selling in that particular city. This step is is done by using Averageif formula as:**

**=AVERAGEIFS(R2:R9552,D2:D9552,D9083)**

**By using this formula I have filled all the zero values of average cost of food.**

**The city name Miller has ‘0’ average of cost and I found that Miller city**

**occurs only once so this city and the row is deleted.**

1. **There were some null values in cuisines column, so to deal with the null values I have made a pivot table in KPI 1 sheet and found that null is in United State of America’s(USA) restaurant so after appling filter in USA I count the cuisines in each restaurant I found the maximum was ‘Maxican’, so I applied Maxican in every null values.**
2. **A new column is created where average cost is showing according to the conversion rate in Indian rupees.**
3. Using the Lookup functions, fill up the countries in the original data using the country code.

Sol: **Here I have to make a new column with a country name in a cleaned data and fill the country name that is given in country description worksheet. This is done by using VLOOKUP function.**

**=IFNA(VLOOKUP(C2,' Country Description'!$A$2:$B$16,2,0),"Country not**

**available")**

**This can be found in a column E of worksheet ‘Cleaned Data,**

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

Ans**: India** have the highest count of Restaurants with 8652 and smallest is Canada with 4.

**Table location in file: KPI 1**

**Table name : Restaurant count in each country (Table 2)**

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

**Ans:** Here I have made a new column ‘Year of opening’ by using delimiter of text to column feature. Year 2018 was the highest year in which Restaurant count highest and year 2012 was the year when restaurant count was lowest.

The Table is shown in the sheet and below is the location:

Table location: KPI 1

Table name: Count of Restaurant in each country (Table 3).

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

Ans: To find the total number of restaurant in India having range of 4 I use the averageifs feature, so in this feature in used price range column and selected ‘4’ and Country name with ‘India’. This formula is written as

**=COUNTIFS('Cleaned data'!Q2:Q9552,'Cleaned data'!T8712,'Cleaned data'!E2:E9552,'Cleaned data'!E3)**

Thie result is 388

Table Location: KPI 1 worksheet of Excel file

Table Name: Table 4

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

Ans: The average number of voters in each country can be found by making a Pivot table.

**The highest votes in Country is Indonesia with 772 average votes and lowest is Brazil with 19 average votes**.

Table Location : **KPI 2**

Table number: **Average number of votes in each country (Table 1)**

1. 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.]**

Ans: **3.27381**

This average rating for price range < 4 and provide online delivery is found by using array formula of average and if function.

The formula is **{=AVERAGE(IF(('Cleaned data'!$Q:$Q<4)\*('Cleaned data'!$N:$N="Yes"),'Cleaned data'!T:T))}**

Location in excel: KPI 3 (Calculation)

1. 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.

Ans: After analysing the country I got four country that are suitabkle for opening a new restaurant. So

1. 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]

Ans: A new column is created named as ‘Price in each country’ in an excel file in which average cost is shown along with the country currency symbol.

This column is created using a Find function and Mid function.

Formula to create the column is :

**=MID(L2,FIND("(",L2,1)+1,FIND(")",L2,1)-FIND("(",L2,1)-1)&" "&S2**

**Table location :** Cleaned data and in column ‘W’

**Table name :**  Price in each country

1. 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?

Ans: **1676**

Table location : KPI 3 (Calculation)

Table name : Answer 13

By using averageifs we camn get the average of the desired item

**=COUNTIFS('Cleaned data'!$N:$N,"No",'Cleaned data'!$Q:$Q,"1",'Cleaned data'!$S:$S,"<=250",'Cleaned data'!$L:$L,"Indian Rupees(Rs.)")**

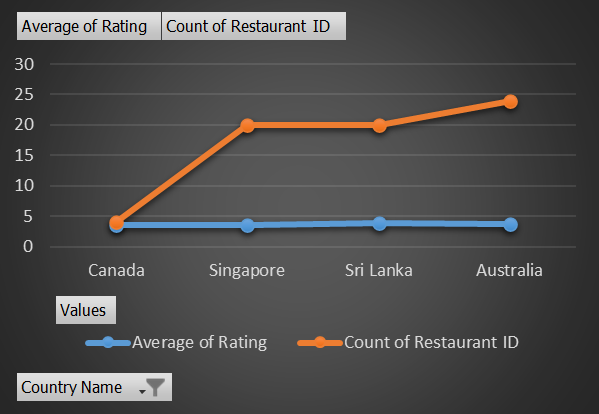
**Subjective Question**

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?

Ans: **Analytical approach:** Made a pivot table with country name as a row and Average rating and count of restaurant ID as a field values. Then applied filters and according to rating lower then 4 and low number of restaurant I got 4 restaurant where team can open newer restaurant.

**Strategic Insight:** The selection of countries for consideration is based on a meticulous review, focusing on those with both low competition and average ratings less than 4. The rationale behind this approach is to pinpoint regions where market entry could yield substantial benefits.

**Visualisation: Line with marker**

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**Suggested countries to open newer restaurant :**

**1. Canada**

**2. Singapore**

**3. Sri Lanka**

**4. Australia**

**Reference location: Pivot and chart in ‘Suggested country for restaurant’ sheet in excel file**

**Table location: Country with lesser competition (Table 1)**

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

Ans:

**Analytical approach:**

Employed a pivot table with Country name and City as a row and in field value I put Rating in average and Restaurant ID as a count. Applied filter on the selected country and selected city with low restaurant count and low rating.

**Strategic Insight:**

On viewing the pivot table city has been found in the suggested country as:

**Cities Suggested for Opening New Restaurant**

1. **Australia - Armidale, Balingup, Beechworth, Dicky Beach, East Ballina, Flaxton, Forrest, Hepburn Springs, Huskisson, Inverloch, Lakes Entrance, Lorn, Macedon, Mayfield, Middleton Beach, Montville, Palm Cove, Paynesville, Penola, Phillip Island, Tanunda, Trentham East, Victor Harbor**
2. **Canada -** **Chatham, Consort, Vineland Station, Yorkton**
3. **Singapore - Singapore**
4. **Sri Lanka – Colombo**

**Reference location: pivot table in ‘Suggested country for restaurant’ sheet in excel file.**

**Table location: States and cities in the suggested countries (Table 2)**

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

Ans:

**Analytical approach:** Here a pivot table is generated with Countries as a row and Rating as an average as a field value. And then filter applied in country.

**Reference location: Pivot table in ‘suggested country for restaurant’ sheet in excel file**

**Table location : Current quality rating in suggested countries (Table 3)**

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

Ans:

**Analytical approach**: I have created a table name ‘Expenditure of food in different country’ in ‘suggested country for restaurant’ by using aggregating function of ‘SUMIF’ formula.



This is obtained by appling a formula as :

**=SUMIF('Cleaned data'!E:E,"Canada",'Cleaned data'!S:S)\*'Cleaned data'!AB9**

**Formula insight (a)** In the above formula the part **SUMIF'Cleaned data'!E:E,"Canada",'Cleaned data'!S:S** makes a sum of all average cost which are of Canada.

1. In the above formula rest part of formula **'Cleaned data'!AB9** is used to multiply with first part of formula

This average cost of two is calculated in Conversion ratio of Indian National Rupees

1. 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.

Ans:

**Analytical approach:** I have made four distinct pivot table for four different countries according to the rating between 2-3,3-4,4-5. The row value has Country name and a field value have rating in an average.

Strategical Insight:

**Restaurants Identified as Biggest Competitors:**

**Marked in Green within the Excel file.**

**These establishments stand out as major competitors due to their highest ratings, reflecting their exceptional performance in the market.**

**Further categorized into two subgroups based on their average ratings.**

**Yellow Marked Restaurants:**

**Represent establishments with average ratings, indicating moderate performance.**

**Red Marked Restaurants:**

**Indicate establishments in the lowest rating bracket, highlighting areas with the utmost room for improvement.**

**Location Overview:**

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

Ans: Analytical approach: Employeed four pivot table for four country separately and applied filter for those country. After analysing and overview we can see some cuisines occurs repeatedly. Then highlighting those foods for better understanding.

Strategical Insight: The cuisines after analysing give a better understanding for the cuisines to be serve in that particular country. This analysing is done on the basis of repeatedly occurring cuisines and the rating of restaurant in which this cuisines serve.

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

Ans:

**Analytical Approach:** I have generated two pivot table considering Table booking and restaurant count in one and Online delivery and restaurant count in other and also made a doughnut chart to represent this values in visuals.

**Strategical insight:** It is advised to provide this service as none of the restaurant are giving this service. Doing this can give a better edge to the new restaurant but before giving this service a survey should be done to gather the information that weather customer are willing to pay for this service.

**Reference:** KPI 4 in excel

Table: **Table 1**

1. 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?

Ans:

**Analytical Approach - I employed a pivot table, focusing on the average cost of two and ratings, with country filters applied as suggested. Subsequently, I calculated the correlation coefficient between ratings and average cost, revealing a value of -0.44829**

**Direction- The negative sign indicates a slight negative correlation. This implies that, as restaurant ratings increase, there is a very marginal tendency for the average cost for two to decrease slightly, and vice versa. However, it's important to note that the correlation is extremely close to zero, suggesting a negligible relationship.**

**Decision- The correlation analysis suggests no substantial relationship between ratings and average cost. Consequently, it is advisable to set the cost based on cuisine preferences and introduce attractive offers to enhance customer engagement, as the correlation is practically insignificant.**

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

Ans:

1. Explain your approach in brief for suggesting countries/cities in order to open new restaurants, if the objective and subjective questions would have been given to assist you. **[you have to give bullet pointers in order to answer this question]**

Ans: **Countries Suggested (Australia, Canada, Singapore, Sri Lanka):**

**Analytical Criteria:**

* **Utilized Pivot tables with restaurant count and average ratings.**
* **Applied filters for low competition and ratings below 4.**

**Strategic Insights:**

* **Identified regions with both low competition and potential for improvement in average ratings.**
* **Focused on countries where market entry could yield substantial benefits.**

**City Selection:**

**Analytical Criteria:**

* **Employed similar Pivot table approach on city-level data.**
* **Focused on cities within suggested countries with low competition and ratings less than 4.**

**Strategic Insights:**

* **Chose cities aligning with the overall country criteria.**
* **Aimed for a balanced selection of cities within the recommended countries based on data analysis.**