# **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?

**Ans: 2 Tables. (Raw Data and Country Description)**

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

**Ans: 31 Attributes (26 in raw data and 5 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: 17 Categorical Columns.**

**Raw Data (13)-**

1. **Restaurant ID (assuming it's a categorical identifier)**
2. **Restaurant Name**
3. **Country Code**
4. **City**
5. **Locality**
6. **Locality Verbose**
7. **Cuisines**
8. **Currency**
9. **Has Table booking**
10. **Has Online delivery**
11. **Is delivering now**
12. **Switch to order menu**
13. **Country**

**Country description (4)-**

1. **Country Code**
2. **Country Name**
3. **Currency**
4. **Currency Symbol**
5. The data consists of some inconsistent and missing values so ensure that the data used for further analysis is cleaned.

**Ans: I made the following enhancements to the dataset:**

1. **City Name Modification:**
   1. Changed city names to “Sao Paulo” and “Istanbul”.
2. **Restaurant Name Adjustments:**
   1. Replaced special character “í©” with “e”.
   2. Removed all occurrence of “#”.
3. **Locality Modification:**
   1. Removed special character “±”.
4. **Date key Opening Format:**
   1. Replaced underscores with slashes and converted the format to a date.
5. **Column Header Formatting:**
   1. Corrected column headers by adding spaces after each word.
6. **Average Cost for Two Update:**
   1. Addressed cases where some restaurants had a cost of 0.
   2. Utilized a formula to update these values; replacing 0s with the average cost for the respective city.
   3. Formula - =IF($R2=0, AVERAGEIFS($R:$R,$C:$C,$C2,$D:$D,$D2),$R2)
      1. $R2=0- Check if cost is 0.
      2. AVERAGEIFS($R:$R,$C:$C,$C2,$D:$D,$D2)- If true take average of that city.
      3. $R2- false condition
7. **Handling Zero Cost in Miller City:**
   1. Removed the restaurant in Miller City with a cost of 0.
8. **Handling Null Values in Cuisine Column:**
   1. Identified null values in the Cuisine column.
   2. Created a Pivot Table named "Dealing with null value of cuisine" in the “Count of Restaurant” sheet.
   3. Utilized the Pivot Table to count the occurrences of each cuisine in the USA country.
   4. Identified that Mexican cuisine had the highest occurrence.

**Manually replaced null values in the Cuisine column with "Mexican" based on the findings from the Pivot Table.**

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

**Ans: Using VLOOKUP Function I retrieve data from country description sheet to the raw data sheet. Applied formula such as:**

* **=IFNA(VLOOKUP($C2,'country description'!$A:$B,2,0),"country key not found")**

**Location Overview:**

* **Excel Reference: Located in the "Raw data" sheet.**
* **Column: Delving into "Country" column.**

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

**Ans: Created Pivot table in sheet Count of Restaurant, Based on pivot table Obtained that India has Largest Number of Restaurants.**

**Location Overview:**

* Excel Reference: Located in the “Count of Restaurant” Sheet.
* Table Exploration: Delving into " Number of restaurant in each country" Pivot table

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

**Ans: Created Pivot table in sheet Count of Restaurant, Based on pivot table Obtained that 2018 has Largest Number of Restaurants.**

**Location Overview:**

* Excel Reference: Located in the " Count of Restaurant” sheet.
* Table Exploration: Delving into " Number of restaurant in years" Pivot table

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

**Ans: India has 388 number of restaurants in price range 4.**

**COUNTIFS -** The question ask to show no. of restaurants in India in price range of 4. As there are two conditions, so I have used the countifs formula to extract the number of restaurants in price range of 4 in India.

**Formula - =COUNTIFS('Raw Data'!$V:$V,"India",'Raw Data'!$P:$P,4)**

**Location Overview:**

* Excel Reference: Located in the "Count of Restaurant” sheet.
* Table Exploration: Delving into " Total number of restaurants in India in the price range of 4" table.

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

**Ans: Indonesia has maximum average of votes as 772.09.**

**Location Overview:**

* Excel Reference: Located in the "Voter of restaurants" sheet.
* Table Exploration: Delving into " Average voters of country" Pivot table

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: 3.27381151**

**Formula –** Using array formula

**{=AVERAGE(IF(('Raw Data'!$P:$P<4)\*('Raw Data'!$M:$M="Yes"),'Raw Data'!$T:$T))}**

**Location Overview:**

* Excel Reference: Located in the " calculation" sheet.

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 careful analysis, it has been identified that there are 59 cities in the dataset where the number of restaurants is less than 10. This valuable insight suggests an opportunity for management to consider opening new restaurants in these specific locations, potentially tapping into underserved markets and expanding the business reach.

**For conditional formatting –**

1. **Select Data:**
   1. Highlight the data you want to format.
2. **Conditional Formatting:**
   1. Navigate to the "Conditional Formatting" option.
3. **New Rule:**
   1. Choose "New Rule" for a custom formatting rule.
4. **Formula:**
   1. =COUNTIF($D$2:$D$9551,$D2)<10
5. **Format Color:**
   1. Specify the formatting style when the condition is met.
6. 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:** I first compiled a list of current currency symbols manually. Following that, I utilized the VLOOKUP function in conjunction with the CONCATENATE function. This approach allowed me to dynamically associate each currency description with its respective symbol, resulting in a customized column with the desired concatenated information.

**Formula –**

**=CONCATENATE(VLOOKUP('Raw Data'!$C2,'country description'!$A$1:$D$16,4,0),$S2)**

**Location Overview:**

* **Excel Reference:** Located in the "Raw data" sheet.
* **Column –** Customize Price

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: 1685**

**Formula =COUNTIFS('Raw Data'!$M:$M,"No",'Raw Data'!$P:$P,1,'Raw Data'!$R:$R,"<=250",'Raw Data'!$K:$K,"Indian Rupees(Rs.)")**

**Location Overview:**

* **Excel Reference:** Located in the "Calculation" sheet.

**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:**

Employed a Pivot table, with country names as rows and restaurant ID count

and average rating as value fields. Subsequently, applied filters to identify countries with low competition and ratings less than 4.

**Strategic Insights:**

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.

**Countries Suggested for Opening New Restaurant:**

* 1. **Australia**
  2. **Canada**
  3. **Singapore**
  4. **Sri Lanka**
  5. **Qatar**

**Visualization: Used Line with markers Representation**

**Location Overview:**

* **Excel Reference:** Located in the "Suggested for open" sheet.
* **Table Exploration:** Delving into "New restaurant suggestion" Pivot table.

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 names and city as rows and restaurant ID count and average rating as value fields. Subsequently, applied filters to the suggested countries and select the city with low competition and ratings less than 4.

**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.
5. **Qatar –** Doha.

**Location Overview:**

* **Excel Reference:** Located in the "Suggested for open" sheet.
* **Table Exploration:** Delving into " Suggested cities" Pivot table.

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

**Ans:**

**Analytical Approach:** I have created the new table “Average rating for selected Country” and value has been taken from “New restaurant suggestion” pivot table.

**Location Overview:**

* **Excel Reference:** Located in the "Suggested for open" sheet.
* **Table Exploration:** Delving into " Question 3- current quality of ratings" table.

|  |  |
| --- | --- |
| **Average rating for selected Country** | |
| Canada | 3.575 |
| Qatar | 4.06 |
| Singapore | 3.575 |
| Sri Lanka | 3.87 |
| Australia | 3.658333333 |

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 the new table “Expenditure on food in suggested country” and value has been aggregating using SUMIF Formula.

The expenditure I calculated in USD according to current exchange rate

**Formula:-**

**=SUMIF('Raw Data'!$V:$V,"Canada",'Raw Data'!$S:$S)\*'country description'!$I$6**

**Components:**

* **SUMIF('Raw Data'!$U:$U,"Canada",'Raw Data'!$R:$R) –**

This part of the formula sums the values in the "Average Cost of 2 People" column (column S) from the "Raw Data" sheet where the corresponding country name in column U is "Canada."

* **'country description'!$I$6: -**

The result of the SUMIF function is then multiplied by the exchange rate located in cell I6 on the "Country description" sheet. This step converts the sum from Canadian dollars to US dollars.

|  |  |
| --- | --- |
| **Expenditure on food in Suggested countries** | |
| Canada | $107.30 |
| Qatar | $39.15 |
| Singapore | $2,305.10 |
| Sri Lanka | $152.00 |
| Australia | $375.70 |

**Location Overview:**

* **Excel Reference:** Located in the "Suggested for open" sheet.
* **Table Exploration:** Delving into " Expenditure on food in suggested country " table

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 employed a comprehensive approach utilizing four distinct pivot tables, each focusing on a specific country. The row section encompasses both the Country and Restaurant Name, and I calculated the averages of ratings This analysis allows for a thorough evaluation of competitors based on their ratings.

**Competitor Evaluation Criteria:**

**Restaurants Identified as Biggest Competitors:**

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

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

**Lowly Rated Restaurants:**

Further categorized into two subgroups based on their average ratings.

**Green** Marked Restaurants**:**

Represent establishments with average ratings, indicating moderate performance.

**Orange** Marked Restaurants**:**

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

**Location Overview:**

* **Excel Reference:** Located in the " Competitor Restaurants" sheet.

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:**

**FOCUS CUISINES:**

Our strategic culinary focus spans Pizza, Mediterranean, Australian, Italian, Chinese, Bakery, Seafood, American, Continental, Desserts, and Beverages. These choices derive from a detailed analysis employing pivot table, ensuring a menu that resonates both locally and globally.

**CULINARY IMPACT ON RATINGS:**

Culinary choices wield significant influence on ratings, as evidenced by an analysis. The pivot table dissects country-specific restaurant ratings, guiding adaptation to local preferences. Simultaneously, the pivot table provides a broader global perspective.

**INSIGHTS INTO DECISION-MAKING:**

Detailed scrutiny of the first pivot table reveals trends, with seafood notably standing out in certain countries. This serves as a decision-making foundation, emphasizing the critical influence of culinary choices on ratings.

**Location Overview:**

* **Excel Reference:** Located in the " Cusines" sheet.
* **Table Exploration:** Delving into " Cusines suggestion " table

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 employed two Pivot tables to compute the potential for table bookings and online deliveries across all countries, utilizing average ratings with online booking and table booking as row values.

**Strategic Recommendation: -**

It is advisable to implement table booking and online delivery services, considering that none of the existing restaurants currently offer these conveniences. This strategic move could give us a competitive edge. However, before proceeding, conducting a survey in the respective countries to gauge consumer interest and willingness towards online delivery and table booking would be prudent.

**Location Overview:**

* **Excel Reference:** Located in the " Online delivery & table booking" sheet.
* **Table Exploration:** Delving into " Online booking and Table booking services suggestion " table.

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 “0.042130726”.**

**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.**

**Visualization: Line with marker**

**Location Overview:**

* **Excel Reference:** Located in the " Cuisine with cost" sheet.
* **Table Exploration:** Delving into " Cuisine relation with price and rating relation with cost." Table.

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

**Ans:**

**Analytical Approach –**

I utilized a Pivot table with the price range in rows and the count of restaurant IDs in the values.

**Insights –**

I have found that in the lower price range, the number of restaurants is notably higher, indicating a concentration of dining options in the more affordable price brackets.

**Distribution of Restaurants in Different Price Ranges -**

|  |  |
| --- | --- |
| Distribution of price range across all country | |
| Price Ranges | Count Of Restaurant |
| 1-2' | 4443 |
| 2-3' | 3113 |
| 3-4' | 1408 |
| 4-5' | 586 |

**Visualization Method:** Utilized a Histogram for a clear representation of the distribution across various price ranges.

**Location Overview:**

* **Excel Reference:** Located in the " Price range distribution" sheet.
* **Table Exploration:** Delving into " Distribution of Restaurants in Different Price Ranges" table

1. 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]**

**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.

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