# **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

* 2 Tables are in the Table.

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

* In Table-1 20 attributes & in Tables 22 attributes

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

**Raw Data (13)**

1. Restaurant ID

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

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

* **Date key Opening**: Column U is not in right date format. To change it to right date format from 21\_09\_2013 replaced  “\_” with  “/”, then changed format to Date which has changed to right format as 21/09/2013

Extracted 3 new columns from Date key

DAY syntax applied =Text (U2,’’dd”)

MONTH syntax applied =TEXT (U2,”mmmm”)

YEAR syntax applied = Text (U2,”yyyy”)

**Column Headers**: Column headers do not having spacing between words. Added space to column headers.

5. using the lookup function, fill up the countries in the original date using the country code.

* **VLookup Function** - As the common value in raw data sheet and country description sheet is country code. Therefore I have used Vlookup (as it lookups the value in vertical column).

Formula used is: =VLOOKUP (C2,'country description'! $A$2:$B$16, 2, FALSE)

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

To create a table that represent number of restaurants opened in each country by:

**Using pivot table:** By placing country name in rows of pivot table fields and then it automatically places count of restaurant to values of pivot table fields. Double tap on count of restaurants and rename it to No.of restaurants opened.

|  |  |
| --- | --- |
| **Countries** | **Number of Restaurant** |
| 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 Emirates | 60 |
| United Kingdom | 80 |
| United States of America | 434 |
| **Grand Total** | **9551** |

**Observation:**

**Countries with more restaurants:** India has largest number of restaurants among all the other countries, followed by USA with significant difference and then United Kingdom, UAE, Brazil, South Africa.

**Countries with less restaurants:** Canada has very less number of restaurants among all the others, followed by Sri Lanka, Qatar, and Singapore.

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

**To create a table for no.of restaurants opened each year by:**

* **Using Pivot Table:** Placed year column to rows of pivot table field, then it automatically suggests count of year to values. There can view for no.of restaurants opened each year.

|  |  |
| --- | --- |
| **Year** | **Number of Restaurant** |
| 2010 | 1080 |
| 2011 | 1098 |
| 2012 | 1022 |
| 2013 | 1061 |
| 2014 | 1051 |
| 2015 | 1024 |
| 2016 | 1027 |
| 2017 | 1086 |
| 2018 | 1102 |
| **Grand Total** | **9551** |

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

**Total number of restaurants in India in the price range of 4**

|  |  |
| --- | --- |
| INDIA | 388 |

**Observation:** India has 388 restaurants in the price range of 4 which is highest among all the other countries

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

**Using Pivot table:** Place country name in rows and votes on value

|  |  |
| --- | --- |
| **Countries** | **Average of Votes** |
| Australia | 111.4 |
| Brazil | 19.6 |
| Canada | 103.0 |
| India | 137.2 |
| Indonesia | 772.1 |
| New Zealand | 243.0 |
| Philippines | 407.4 |
| Qatar | 163.8 |
| Singapore | 31.9 |
| South Africa | 315.2 |
| Sri Lanka | 146.5 |
| Turkey | 431.5 |
| United Arab Emirates | 493.5 |
| United Kingdom | 205.5 |
| United States of America | 428.2 |
| **Grand Total** | **156.9097477** |

**Observation:**

**Highest average of votes:** Indonesia has the highest average of votes with 772 followed by United Arab Emirates 493 and Turkey 431.

**Lowest average of votes:** Brazil has the lowest average of votes with 19 followed by Singapore 31

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.]**

=AVERAGE (IF (('Raw Data'! $Q: $Q<4)\*('Raw Data'! $N: $N="Yes"),'Raw Data'! $T: $T))

In Raw filtered sheet Column no – AC.

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.

To suggest management about opening new restaurants in cities:

Using conditional formatting:

Steps:

Select data: By selecting the data that needs to format

Conditional formatting: Select conditional formatting option and choose new rule

Formula: =COUNTIF ($E:$E,$E2)<=10

**Sheet Reference:** Excel sheet (Raw sheet)

**Recommendation:** From the table created by using raw data there are 59 cities where no.of restaurant is less than 10. Management can consider opening new restaurants in these cities, as these cities are less competitive.

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]

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

IN COLUMN Y RAW FILTRED SHEET.

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?
   * By CTRL SHIFT+ENTER we can create array formula.

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

Sheet = Raw data Filtered Column:AC

**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?

**Method used: Using Pivot table**: By using pivot to find out the countries suggested for opening new restaurants.

**Analysis**:

After observation, I would suggest countries which comes under the condition of less competition with average rating. The reason for choosing average rating is that, if the people in that country are not satisfied with the restaurants and hence the ratings are less. And this thing can be an advantage, we can do a market survey and analyze the reasons why people are less satisfied and we can focus on those things while opening the restaurant.

**Countries Suggested for opening new restaurant**: AUSTRALIA,

CANADA, SINGAPORE, SRI LANKA.

**Visualization method used**: Line chart

**Location**

          Excel file - sheet name - **4) new opening - state and cities**

Table - **1) Analysis of Countries with lesser competition**

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

**Method used:** I have used Pivot table, in which rows are country and City and value field column is count of restaurant id and average of rating.

**Recommendation:**

Names of states and cities in suggested countries suitable for opening new restaurants as follows:

1. **Australia -** Arm dale, Baling up, Beech worth, Dickey Beach, East Ballina, Flax ton, Forrest, Hepburn Springs, Huskisson, Interlock, Lakes Entrance, Lorn, Macedon, Mayfield, Middleton Beach, Montville, Palm Cove, Paynesville, Panola, Phillip Island, Tanunda, Trent ham East, Victor Harbor
2. **Canada -** Chatham, Consort, Vineland Station, Yorkton
3. **Singapore -** Singapore
4. **Sri Lanka –** Colombo

**Location:** Sheet tab named New Restaurants

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

**Method used:** I have used aggregated function that is Average if function to find the average rating of the suggested countries.

**Formula used**: =AVERAGEIF ('Raw Data - Filtered'!$D$735:$D$9551,"Australia",'Raw Data - Filtered'!$T$735:$T$9551)

|  |  |
| --- | --- |
| **Suggested Country With Rating** |  |
| Australia | 3.7 |
| Canada | 3.6 |
| Singapore | 3.6 |
| Sri Lanka | 3.9 |

**Location:**

 Excel file - sheet name - **4**) new opening - state and cities

 Table - 3) Suggested country with rating

Conclusion

**Based on the average ratings of restaurants in the suggested countries:**

Sri Lanka has the highest average rating of 3.9, indicating that restaurants there generally have better quality as per the ratings.

Australia follows closely with an average rating of 3.7, suggesting good quality restaurants as well.

Canada and Singapore both have an average rating of 3.6, indicating similar quality levels for restaurants in these countries.

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

**Method used:** I have used aggregated function that is SUMIF function to find the total expenditure in the suggested country.

* **Formula used** : =SUMIF('Raw Data - Filtered'!$D$:D,"Australia",'Raw Data - Filtered'!$S:$S)

|  |  |  |  |
| --- | --- | --- | --- |
| **Total Expenditure on Food** | | | |
|  | Australia | $375.70 |  |
|  | Canada | $107.30 |  |
|  | Singapore | $2,305.10 |  |
|  | Sri Lanka | $152.00 |  |

**Location:** Excel file - Sheet name - 4) new opening - state and cities

Table - 4) Total expenditure on food

Conclusion

**Based on the total expenditure on food in the suggested countries:**

* + Singapore has the highest total expenditure on food, amounting to $2,305.10.
  + Australia follows with a total expenditure of $375.70.
  + Sri Lanka has a moderate total expenditure of $152.00.

Canada has the lowest total expenditure on food, totaling $107.30

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.

**Using pivot table:** Created 4 different pivot tables for the countries suggested for opening new restaurants. Placed country name in filter tab of pivot table field, restaurant name to rows and rating to place in values tab. And then filter each country in one pivot table, summarize value tab of rating by average.

**Criteria for biggest competitors**: Biggest competitors for each different state and country are labelled with green colour.

**Canada**

|  |  |
| --- | --- |
| Lake House Restaurant | 4.3 |

**Australia**

|  |  |
| --- | --- |
| 1918 Bistro & Grill | 4.4 |

|  |  |
| --- | --- |
| 5 Little Pigs | 4.1 |

|  |  |
| --- | --- |
| Bridge Road Brewers | 4.6 |

|  |  |
| --- | --- |
| The Belle General | 4.1 |

|  |  |
| --- | --- |
| Vivo Bar and Grill | 4.4 |

**Singapore**

|  |  |
| --- | --- |
| AL ‘frank Cookies | 4.2 |

|  |  |
| --- | --- |
| Cut By Wolfgang Puck | 4 |

|  |  |
| --- | --- |
| Fratini La Trattoria | 4.1 |

**Sri lanka**

|  |  |
| --- | --- |
| Arabian Knights | 4.2 |
| Burger's King | 4.1 |
| Butter Boutique | 4.2 |
| Cafe Beverly | 4.1 |
| Carnival Ice Cream | 4.1 |
| Cricket Club Cafe | 4.2 |
| Ministry of Crab | 4.9 |
| Simply Strawberries By Jagro | 4.5 |
| T.G.I. Friday's | 4 |
| The Commons | 4 |
| The Manhattan FISH MARKET | 4 |
| The Sizzle | 4.2 |
| Upali's | 4 |

**Criteria for lower bracket:** Lowest competitors are labelled with Pink, Light yellow colors.

**Location -**

           Excel file - sheet name - 5) Competitor Analysis

**Biggest Competitors:**

* **Canada:** Lake House Restaurant with a rating of 4.3 seems to be a strong competitor.
* **Australia:** Bridge Road Brewers stands out as a significant competitor with a high rating of 4.6.
* **Singapore:** Cut By Wolfgang Puck, with a rating of 4.0, could be considered a notable competitor.
* **Sri Lanka:** Ministry of Crab boasts a high rating of 4.9, making it a major competitor in the Sri Lankan market.

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

CUISINES TO FOCUS- Pizza, Italian, Seafood, Mediterranean, Modern Australian, Bakery, Desert, American, Chinese.

* **The choice of cuisines -** affect the ratings as every country as their own local food choices and preferences. For example if you are selling food in other country it would not sell as much as it would sell in Australia.

* **Basis for suggestion** - The basis I have taken the ratings. The restaurants with cuisines which are local to that country are high in rating and other than this other food preferences which are famous in all countries are like seafood, Italian.

* **Decision** - As by observing the pivot table, I analyze that some cuisines like seafood are having very high rating due to its popularity in that country. The decision is that cuisine affect the rating is based on the observation. These analyses provide a starting point for understanding trends and patterns in the data, allowing to make informed decisions and improvements in the restaurant business based on customer feedback and preferences.

* **Location:**

          Excel file - sheet name - 6) Cuisines Analysis

**Cuisines to Focus On:**

1. **Seafood:** Seafood appears to have high ratings across multiple countries, indicating its popularity and potential for positive feedback.
2. **Italian:** Italian cuisine also consistently receives high ratings in various countries, suggesting it could be a reliable option for positive feedback.
3. **Modern Australian:** In Australia specifically, Modern Australian cuisine seems to be well-received, indicating a focus on local flavors and ingredients could be beneficial.
4. **Bakery/Dessert:** These categories may also be worth focusing on, as they tend to have broad appeal and can complement main dishes or stand alone as a specialty.
5. According to our current data, should we go for online delivery and table booking? Does that affect the customer’s ratings?

Recommendation**:** As none of our competitors or other existing restaurants has implemented both table booking and online delivery. If we can implement this to our new restaurants this makes us different among the rest. Also our service as online delivery provides customers with convince.

Parameters to check**:**  Shipping costs which is excluded from food ordered. ETA of online delivery. As we are opening new restaurants in 4 different countries. Must check with customer’s preference with one restaurant in each country. By evaluating that result can expand our online delivery services to all the new restaurants opened.

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?

**Method used**: I have used CORREL Function to find the correlation between rate of cuisines and ratings

* **Sign (-)**: The negative sign indicates a slight negative correlation. This means that as restaurant ratings increase, there is a very small tendency for the cost for two to decrease slightly, and vice versa. However, the correlation is so close to zero that it's essentially negligible.

* **Magnitude (Absolute Value)**: The absolute value (ignoring the negative sign) is very close to zero (0.0057), indicating an extremely weak correlation. In practical terms, the correlation is so minimal that it's unlikely to be practically significant or meaningful

**Decision**: We can keep the rate of cuisines higher, as the correlation is very negligible between rating and rate of cuisines.

Correlation of rating and cost

* **Location :** Excel File - sheet named - 8) Correlation

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

**Using Pivot table:** Placed price range in rows and restaurant ID in values, further restaurant ID is summarized into count.

|  |  |
| --- | --- |
| **Price range** | **Count of Restaurant ID** |
| 1 | 4444 |
| 2 | 3113 |
| 3 | 1408 |
| 4 | 586 |
| **Grand Total** | **9551** |

* **Location** : **Excel File - sheet named : 9) Price range**

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]**

To identify the countries/cities to open new restaurants used pivot tables by can measure the country/city performance with ratings and price range.

**Pivot tables:**

* Created pivot tables to get no.of restaurants opened each year and for country wise. With this got an overview about competition, if any drop or rise in no.of restaurants opened yearly.
* This helped to filter out countries/cities with less competition and from that can choose for lower ratings for restaurants and then again competitors for chosen location. Which helps to analysis the market share of the competitors in specific country.

**Country selection:**

* From the created pivot tables chosen the countries with lowest no.of restaurants. In where found out 4 Countries.

**City Selection:**

* Created a pivot table with country name and city in rows and restaurant ID, rating to value field. Then summarize value field restaurant ID to Count and rating to Average. After that applied filter to suggested countries and filtered cities with rating less than 4.
* Now around 59 cities are sorted out from the pivot table, where in the suggested countries these cities would be suitable to open new restaurants.

**MISSING CUISINE IN CUISINE COLUMN**

There were nine blank rows in the "cuisine" column, and I have filled those rows. I used Pivot table to fill those rows you can see in my excel data set. Sheet name is **Missing cuisine.**

**Location- Missing cuisine sheet**

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