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# EXCEL CASE STUDY 2

**Objective of the Analysis**: The primary goal seems to be enhancing customer satisfaction through efficient complaint resolution. This involves understanding complaint patterns, identifying issues with data integrity (such as mismapped state names or codes), analyzing company performance in addressing complaints, and visualizing trends over time.

**Data Integrity and Preparation**

**Operational Efficiency**

**Customer Relations and Retention**

**Strategic Decision Making**

#### Key Points from the Tasks:

#### 1 ****Data Merging and Cleaning****:

2 Analyzing Complaint Resolution

3 Company Performance Analysis:

**4 Trend Analysis**:

* **A ) Monthly and Yearly Trends**: B) **Top Issues and Companies**

5 Dashboard and Reporting

### Conclusion:

This Excel-based analysis offers actionable insights that can directly impact customer satisfaction and operational efficiency. By maintaining a clear focus on data integrity, customer-centric analysis, and strategic decision-making, the business can enhance its service offerings, leading to improved customer retention and satisfaction rates.

***Task 1: Working on data and combining the datasets***

***Data in the worksheet State\_Code\_Name is take from internet and is available in JSON format. Perform the following tasks as part of data preparation***

***Q 1 ] 1. Create two new columns in the State\_Code\_Name worksheet and name them as STATE and CODE respectively.***

## =MID(A2,FIND("STATE",A2)+9,FIND(",",A2)-14)

MID: This is a function that returns a specific number of characters from a text string, starting at the position you specify.

FIND("STATE",A2)+9: The FIND function locates the starting position of the text “STATE” in cell A2. Adding 9 to this position moves the starting point to the beginning of the state name (right after the opening quote).

FIND(",",A2)-14: This part of the formula finds the position of the comma in the text string, which marks the end of the state name. Subtracting 14 from this position gives the number of characters to extract (the length of the state name).

## The formula =MID(A1, FIND("CODE", A1) + 8, 2) is used to extract the code from a JSON string in cell A1 that follows the word “CODE”. Here’s how it works:

MID: This is a text function that extracts a specific number of characters from a text string, starting at a position you specify. It takes three arguments: the original text string, the start position, and the number of characters to extract.

FIND("CODE", A1): This part of the formula finds the starting position of the word “CODE” in the text string in cell A1.

+ 8: This is added to the starting position to move the start point to the beginning of the actual code. This is because there are 7 characters (including spaces and quotes) between the start of the word “CODE” and the start of the actual code, and we start counting from 1, so we add 8.

2: This is the number of characters to extract. Since state codes are two letters, we use 2.

MID Function: The MID function extracts a given number of characters from a text string, starting at the position you specify. The syntax is MID(text, start\_num, num\_chars), where:

text is the original text string.

start\_num is the position of the first character you want to extract.

[num\_chars is the number of characters to extract1](https://www.techrepublic.com/article/extract-substring-excel/" \t "https://edgeservices.bing.com/edgesvc/_blank).

[FIND Function: The FIND function locates one text string within a second text string, and returns the number of the starting position of the first text string from the first character of the second text string2](https://www.sageintelligence.com/tips-and-tricks/excel-tips-tricks/2013/10/extract-text-text-string-using-mid-find-functions/" \t "https://edgeservices.bing.com/edgesvc/_blank).

***3. Create a new column in the worksheet Consumer\_Complaints and name it State\_Name***

***4. Fill the column State\_name in the worksheet Consumer\_Complaints with the data from the State\_Code\_Name worksheet***

-- We have to look up the state name corresponding to a state code using ***State\_Code\_Name worksheet***

i am using this formula

## =INDEX(State\_Code\_Name!$C$2:$C$52(STATE) ,MATCH(CONSUMER\_COMPLAINT!E5(STATE CODE),State\_Code\_Name!$D$2:$D$52(STATE CODE),0))

**MATCH Function:** MATCH(CONSUMER\_COMPLAINT!E5, State\_Code\_Name!$D$2:$D$52, 0) is looking for the position of the value in cell E5 (state code) of the “CONSUMER\_COMPLAINT” worksheet within the range D2:D52 of the “State\_Code\_Name” worksheet. The 0 at the end specifies that we want an exact match.

**INDEX Function:**INDEX(State\_Code\_Name!$C$2:$C$52, ...) is used to return a value from the range C2:C52 of the “State\_Code\_Name” worksheet. The row number is provided by the MATCH function.

**The dollar sign $ in Excel is used for creating absolute references.**

 the $ signs are making C2:C52 and D2:D52 absolute references. [This means that if you copy this formula to another cell, it will still refer to the ranges C2:C52 and D2:D52 in the “State\_Code\_Name” worksheet](https://spreadsheetplanet.com/what-does-dollar-sign-mean-in-excel-formulas/" \t "https://edgeservices.bing.com/edgesvc/_blank)

1. ***What is the count of records for which the State Name values didn't showed up (records with #N/A) ?***

*=COUNTIF(Table1[STATE NAME],"#N/A")*

*This formula for counting the records with #N/A in the STATE NAME*

**=COUNTIF(range, criteria)**

range: This is the range of cells you want to count. For example, A1:A20.

criteria: This is the condition that tells the function which cells to count. It can be a number, expression, cell reference, text, or a function that defines which cells will be counted.

1. **Create a summary table to display number of complaints for only those State\_Codes where State\_Name is not mapped to State\_Code in the worksheet**

Create a pivot table for this in filter filed drop a state\_name column

In row field drop a state code column and in value field drop a complaint column and set field value to count , then filter state\_name to #N/A

**7. Give your inferences for the possible reasons of non availability of the State\_Name using the above steps.**

**Data Entry Errors**: There might be typos or inconsistencies in how State\_Names or State\_Codes were entered into the system.

**Incomplete Data:** The data set may be incomplete, with some State\_Names missing or not recorded.

**Mismatched Records:** The State\_Codes and State\_Names might come from different sources or time periods, leading to mismatches.

**System Limitations:** The system used to collect or display the data might have limitations that prevent it from showing all State\_Names

|  |  |
| --- | --- |
|  | **Task 2: Working on dates** |
|  |  |

First we should convert DATE RESOLVED and DATE RECIVED to date format

**1. What is the resolution time (in days) after which the issue/complaint is resolved by the company?**

Do DATE RESOLVED - DATE RECIVED to get answer

1. ***Create a new column YEAR using the date when complaint was received.***

First create year column in consumer complaint work sheet

Use =year() formula for date received column in year column

1. ***Create a new column QTR (US FY) using the date when complaint was received. Column should have the quarter data based on US FY i.e. Q1 - JAN, FEB and MAR***

First create month column using month formula

Use **=CONCATENATE("Q", CEILING.MATH([@[MONTH]]/3))**

**Divide the Month by 3:** The formula starts with [@[MONTH]]/3. This part of the formula is dividing the month number by 3. For example, if the month is February (which is month 2), the formula calculates 2/3 which equals 0.67.

**Round Up to the Nearest Integer:** The next part of the formula is CEILING.MATH([@[MONTH]]/3). The CEILING.MATH function rounds the result of the division up to the nearest integer. So, in our example, 0.67 is rounded up to 1.

**Add “Q” in Front of the Quarter Number:** The final part of the formula is CONCATENATE("Q", CEILING.MATH([@[MONTH]]/3)). The CONCATENATE function combines two or more text strings into one text string. In this case, it’s adding the letter “Q” in front of the quarter number. So, in our example, it adds “Q” in front of 1 to get “Q1”.

So, the entire formula =CONCATENATE("Q", CEILING.MATH([@[MONTH]]/3)) is creating a quarter identifier (“Q1”, “Q2”, “Q3”, “Q4”) based on the month number.

**Task 3: Reporting - Create a report with following details for each Company Name ( Summarize the data at Company level )**

1. **Company wise total number of complaints. Sort the data in desc order of number of complaints**
2. **What is the number and %age of complaints where the timely response was not shared?**
3. **How many complaints were disputed. Also display the %age of number of complaints of the total complaints for each company.**

**4. Average delay in days for closure of the complaints.**

Here create a pivot table

**For Company wise total number of complaints:**

Drag the ‘Company Name’ field to the Rows area and the ‘Complaint ID’ field (or any other unique identifier for each complaint) to the Values area. Make sure the calculation type for the ‘Complaint ID’ field is set to ‘Count’. Then, sort the Pivot-table in descending order of the count of complaints.

**For Number and %age of complaints where the timely response was not shared:**

In pivot table add consumer\_disputed column to the row then

Using count if formula calculate the the number of complaints where the timely response was not shared

To calculate the percentage, divide the number of such complaints by the total number of complaints for each company.

**For Number and %age of disputed complaints:**

Use count if formula to calculate the number of disputed complaints

=COUNTIF(RANGE,CRITIRIA)

Then

To calculate the percentage, divide the number of such complaints by the total number of complaints for each company.

**Average delay in days for closure of the complaints:**

Add resolved time column to value field Make sure the calculation type for the resolved\_time is in average

Task 4: Reporting - Create a report with following details.

1. **Top five companies with maximum number of complaints along with count of complaints**

**Short Explanation:** You’re using a Pivot Table in Excel to analyze your customer complaints data. You’re calculating the total number of complaints for each company and then sorting these issues in descending order. This allows you to see the top five companies with the maximum number of complaints.

**Business Insight:** This analysis helps you understand which companies are causing the most complaints among your customers. These top companies might be areas where improvements could have the biggest impact on customer satisfaction. Addressing these companies could lead to a significant reduction in the total number of complaints, there by improving overall customer satisfaction. This insight can guide your business strategies and help you focus on resolving the most common companies facing complaints.

1. **Top five issues with maximum number of complaints along with count of complaints**

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1. **Monthly trends of the number of complaints in form of line / area chart**

**Short Explanation: we are** using a Pivot Table in Excel to analyze your customer complaints data. We are calculating the total number of complaints for each month and then visualizing this data with a line or area chart. This allows you to see the monthly trend of the number of complaints.

**Business Insight:** This analysis helps you understand how the volume of complaints is changing over time on a monthly basis. If there are certain months where the number of complaints spikes, it could indicate a seasonal trend or a specific issue that arises during those months. Conversely, if the number of complaints drops during certain months, it could suggest periods of high customer satisfaction. This insight can guide your business strategies and help you anticipate and prepare for periods of high complaint volumes.

Task 5: Dashboard - Create a view with following details on the year level

1. **Get the following KPIs**
2. I.**Total number of complaints registered in percentage with YoY change in the numbers?**
3. **Short Explanation:** we using a Pivot Table in Excel to analyze the customer complaints data. we calculating the total number of complaints per year and the Year-over-Year (YoY) change in these numbers. The YoY change is calculated as the percentage difference in the number of complaints from one year to the next.  
    **Business Insight:** This analysis helps us to understand how the volume of complaints is changing over time. If the YoY change is positive, it means the number of complaints is increasing, which could indicate growing customer dissatisfaction. If it’s negative, it means the number of complaints is decreasing, which could suggest improvements in your products or services.

This insight can guide your business strategies and help you focus on areas that need improvement for enhancing customer satisfaction.

Ii.**Number of complaints for which timely response was given . What is the YoY change in the numbers?**

**Short Explanation:** we using a Pivot Table in Excel to analyze the customer complaints data. We calculating the total number of complaints per year for which a timely response was given and the Year-over-Year (YoY) change in these numbers. The YoY change is calculated as the percentage difference in the number of timely responses from one year to the next

**Business Insight:** This analysis helps you understand how your company’s responsiveness to complaints is changing over time. If the YoY change is positive, it means the number of timely responses is increasing, which could indicate improvements in your customer service. If it’s negative, it means the number of timely responses is decreasing, which could suggest areas for improvement in your response times.

 This insight can guide your customer service strategies and help you focus on improving response times to enhance customer satisfaction.

**iii. Average resolution time for the complaints. What is the YoY change in the numbers?**

**Short Explanation:** we are using a Pivot Table in Excel to analyze the customer complaints data. You’re calculating the average resolution time for complaints each year and the Year-over-Year (YoY) change in these numbers. The YoY change is calculated as the percentage difference in the average resolution time from one year to the next. We are then plotting this data on a line chart to visualize the trends.

**Business Insight:** This analysis helps us to understand how the company’s efficiency in resolving complaints is changing over time. If the YoY change is negative, it means the average resolution time is decreasing, which could indicate improvements in your customer service efficiency. If it’s positive, it means the average resolution time is increasing, which could suggest areas for improvement in your resolution process.

This insight can guide your customer service strategies and help you focus on improving resolution times to enhance customer satisfaction.

2. Proportion of the # of complaints by different products

**Short Explanation:** You’re using a Pivot Table in Excel to analyze your customer complaints data. You’re calculating the total number of complaints for each product and then determining what proportion this represents of the total complaints. This is done by showing the values as a percentage of the grand total.

**Business Insight:** This analysis helps you understand which products are generating the most complaints. Products with a higher proportion of complaints might be areas where improvements could have the biggest impact on customer satisfaction. Conversely, products with a lower proportion of complaints might be areas where your company is doing well in terms of customer satisfaction.

This insight can guide your product development and customer service strategies.

**3. Proportion of the # of complaints by different channels which were used to file the complaint**

**Short Explanation:** You’re using a Pivot Table in Excel to analyze your customer complaints data. You’re calculating the total number of complaints for each submission channel and then determining what proportion this represents of the total complaints. This is done by showing the values as a percentage of the grand total.

**Business Insight:** This analysis helps you understand which channels are generating the most complaints. Channels with a higher proportion of complaints might be areas where improvements could have the biggest impact on customer satisfaction. Conversely, channels with a lower proportion of complaints might be areas where your company is doing well in terms of customer satisfaction.

This insight can guide your customer service strategies and help you focus on improving channels with high complaint volumes.

1. **There is a limited bandwidth to look in all the complaints / issues raised by customers. Display graphically which complaints should be taken on priority ?**

**Short Explanation:**

* **Frequency of Complaints:** By creating a Pivot Table with ‘Issue’ in the Rows field and ‘Complaint ID’ in the Values field, you’re counting the number of complaints for each issue. Visualizing this data with a bar or pie chart can help identify the most frequent complaints.
* **Business Insight:** This analysis can help prioritize areas for improvement in your business. Issues that are more frequent or severe could be causing significant dissatisfaction among your customers and might need urgent attention. Similarly, products that are associated with a high number of complaints could be critical areas for improvement.
* This insight can guide your business strategies and help improve customer satisfaction

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