

CALL CENTRE DATA ANALYSIS PROJECT

Project Overview:

Analysing Customers Data For A Call Centre To Gain Insights And Enhance Decision-Making.

Project Objective:

Generate A Improved Dynamic Dashboard's For Call Centre Customers To Analyze And Visualize Customers Data.

Project Requirements:

- Problem Statement
- Data Source
- Software's Required

Problem Statements:

1. Overall customer satisfaction
2. Overall calls answered/abandoned
3. Calls by time
4. Average speed of answer
5. Agent's performance quadrant -> average handle time (talk duration) vs calls answered
6. Define proper KPIs
7. Create a dashboard for the retention manager reflecting the KPIs

Data Source:

Utilizing Customers Data Collected By Call Centre For Comprehensive Data Analysis.

Data Collection Tool : MS excel

Software's Used:

OS Tool	:	ChatGPT
BI Tool	:	Microsoft Power BI

Project Process:

Step By Step Process:

1. Collecting the Data set
2. Importing Data set Into Power Bi
3. Data Transform And Cleaning
4. Data Processing(DAX)
5. Data Visualization
6. Final Dash Board

1.Collecting Data

The Data set collected From Call Centre In The Form Of Excel Sheets.

2.Importing Data set Into Microsoft Power BI

- For That, Open Power BI, Go to Get Data and Select Excel Workbook Then, Make a Connection With Excel File
- After Completion of Connection we can Load Or Transform Data Based On Requirement

3,4.Data Cleaning &Processing

- After Loading Data Into PowerBI By Using The Power Query Editor, We Perform DAX(Data Analysis Express) For Data cleaning and Processing
- These Are Some Of DAX Formulas written for Data Visualization

DAX Formula's:

1.Date Table

```
Date Table = CALENDAR(MIN('Call Centre Data'[Date]),MAX('Call Centre Data'[Date]))
```

```
Hour Table = VAR StartingHour = 0 VAR EndingHour = 23  
RETURN GENERATESERIES(StartingHour, EndingHour)
```

2. Customers Data table

1. Total Calls Answered = `CALCULATE(COUNTROWS('Call Centre Data'),'Call Centre Data'[Answered (Y/N)] = "Y")`
2. Avg Satisfaction = `AVERAGE('Call Centre Data'[Satisfaction rating])`
3. Overall Calls Answered = `COUNTROWS(FILTER('Call Centre Data','Call Centre Data'[Answered (Y/N)] = "Y"))`
4. Overall Calls Abandoned = `COUNTROWS(FILTER('Call Centre Data','Call Centre Data'[Answered (Y/N)] = "N"))`
5. Overall customer satisfaction = `VAR _countpositive = CALCULATE(DISTINCTCOUNT('Call Centre Data'[Call Id]), FILTER('Call Centre Data', 'Call Centre Data'[Satisfaction rating] <> BLANK())) VAR _counttotal = CALCULATE(DISTINCTCOUNT('Call Centre Data'[Call Id])) RETURN DIVIDE(_countpositive, _counttotal)`
6. Average Handle Time = `AVERAGEX(FILTER('Call Centre Data', 'Call Centre Data'[Answered (Y/N)] = "Y") 'Call Centre Data'[AvgTalkDuration])`
7. Average Speed of Answer = `AVERAGEX(FILTER('Call Centre Data', 'Call Centre Data'[Answered (Y/N)] = "Y") 'Call Centre Data'[Speed of answer in seconds])`
8. CallsByHour = `COUNTROWS(FILTER('Call Centre Data', HOUR('Call Centre Data'[Time]) = VALUE(FORMAT(NOW(), "HH"))))`
9. CallsByTime = `COUNTROWS('Call Centre Data')`

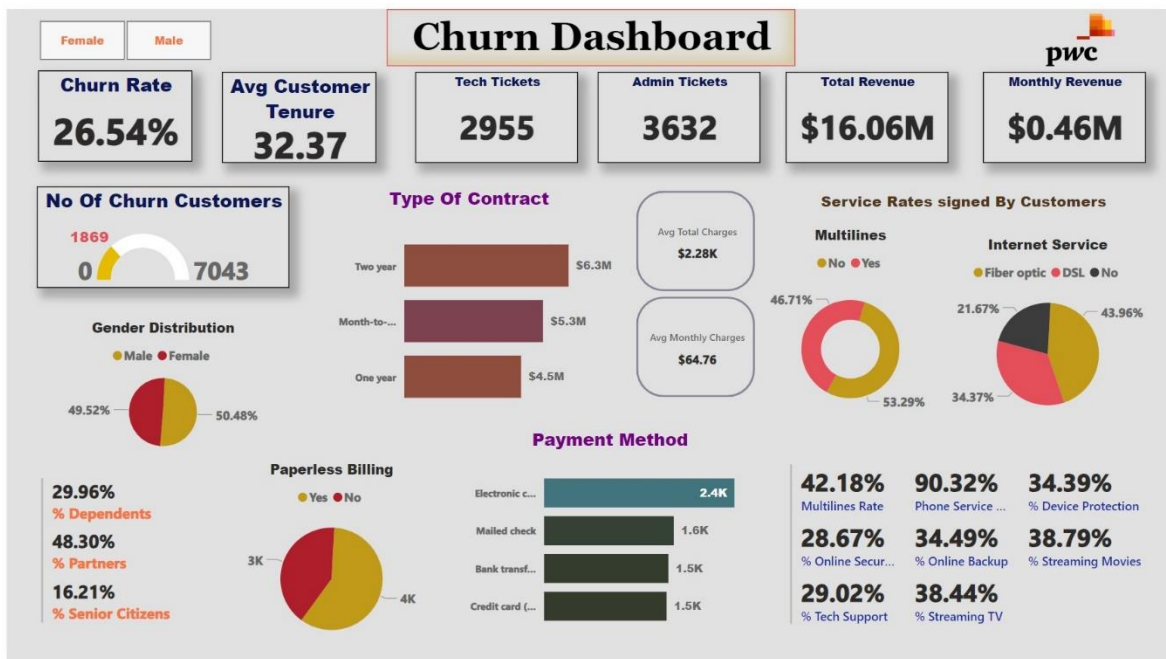
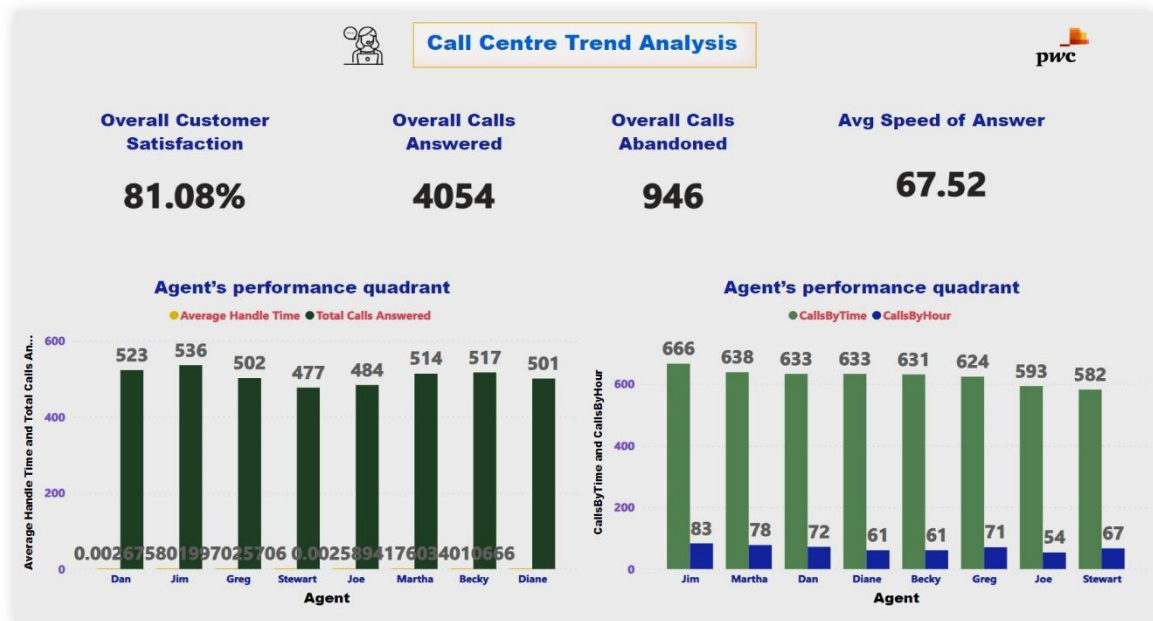
3. Churn Data Table

1. Total No Of Customers = `COUNT('01 Churn-Dataset'[customerID])`
2. Total Tenure = `SUM('01 Churn-Dataset'[tenure])`
3. Total Charges = `SUM('01 Churn-Dataset'[TotalCharges])`
4. Tech Tickets Count = `SUM('01 Churn-Dataset'[numTechTickets])`
5. Tech support yes = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset', '01 Churn-Dataset'[TechSupport] = "Yes")))`
6. Streaming TV yes = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset', '01 Churn-Dataset'[StreamingTV] = "Yes")))`
7. Streaming Movies yes = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset', '01 Churn-Dataset'[StreamingMovies] = "Yes")))`
8. Phone service yes = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset', '01 Churn-Dataset'[PhoneService] = "Yes")))`
9. Phone Service Rate = `DIVIDE([Phone service yes], [Total No Of Customers])`
10. Phone service No = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset', '01 Churn-Dataset'[PhoneService] = "No")))`
11. Parters Count = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset', '01 Churn-Dataset'[Partner] = "Yes")))`
12. Online Security yes = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset', '01 Churn-Dataset'[OnlineSecurity] = "Yes")))`
13. Online Backup yes = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset', '01 Churn-Dataset'[OnlineBackup] = "Yes")))`
14. No Of Senior Citizens = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset', '01 Churn-Dataset'[SeniorCitizen] = "1")))`

15. No Of Churn Customers = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset','01 Churn-Dataset'[Churn]="YES")))`
16. Multilines Yes = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset','01 Churn-Dataset'[MultipleLines]="Yes")))`
17. Multilines Rate = `DIVIDE([Multilines Yes],[Total No Of Customers])`
18. Multilines No Phone service = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset','01 Churn-Dataset'[MultipleLines]="No Phone Service")))`
19. Multilines No = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset','01 Churn-Dataset'[MultipleLines]="No")))`
20. Monthly Charges = `SUM('01 Churn-Dataset'[MonthlyCharges])`
21. Internet Service No = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset','01 Churn-Dataset'[InternetService]="No")))`
22. Internet Service Fiber Optic = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset','01 Churn-Dataset'[InternetService]="Fiber Optic")))`
23. Internet Service DSL = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset','01 Churn-Dataset'[InternetService]="DSL")))`
24. Fiber Optic Internet Rate = `DIVIDE([Internet Service Fiber Optic],[Total No Of Customers])`
25. DSL Internet Rate = `DIVIDE([Internet Service DSL],[Total No Of Customers])`
26. Device Protection Yes = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset','01 Churn-Dataset'[DeviceProtection]="Yes")))`
27. Dependents' Count = `CALCULATE(COUNTROWS(FILTER('01 Churn-Dataset','01 Churn-Dataset'[Dependents] = "Yes")))`
28. Customer Tenure = `DIVIDE([Total Tenure],[Total No Of Customers])`
29. Churn Rate = `DIVIDE([No Of Churn Customers],[Total No Of Customers])`
30. Avg Monthly Charges = `DIVIDE([Monthly Charges],[Total No Of Customers])`
31. Avg Charges Per Customer = `DIVIDE([Total Charges],[Total No Of Customers])`
32. Admin Tickets Count = `SUM('01 Churn-Dataset'[numAdminTickets])`
33. % Tech Support = `DIVIDE([Tech support yes],[Total No Of Customers])`
34. % Streaming TV = `DIVIDE([Streaming TV yes],[Total No Of Customers])`
35. % Streaming Movies = `DIVIDE([Streaming Movies yes],[Total No Of Customers])`
36. % Senior Citizens = `DIVIDE([No Of Senior Citizens],[Total No Of Customers])`
37. % Partners = `DIVIDE([Parters Count],[Total No Of Customers])`
38. % Online Security = `DIVIDE([Online Security yes],[Total No Of Customers])`
39. % Online Backup = `DIVIDE([Online Backup yes],[Total No Of Customers])`
40. % Device Protection = `DIVIDE([Device Protection Yes],[Total No Of Customers])`
41. % Dependents = `DIVIDE([Dependents' Count],[Total No Of Customers])`
42. Multi Lines = `{("Multilines Yes", NAMEOF('Calculations'[Multilines Yes]), 1),("Multilines No", NAMEOF('Calculations'[Multilines No]), 0)}`
43. Parameter = `{("DSL Internet Rate", NAMEOF('Calculations'[DSL Internet Rate]), 0), ("Fiber Optic Internet Rate", NAMEOF('Calculations'[Fiber Optic Internet Rate]), 1),("Multilines Rate", NAMEOF('Calculations'[Multilines Rate]), 2),("Phone Service Rate", NAMEOF('Calculations'[Phone Service Rate]), 3)}`

5.Data Visualization

- After Cleaning And Processing The Data According To The Requirements of Call Centre, Prepare Dashboards' For A Call Centre To Get Insights And Improve Decision-Making



Conclusion:

For Call Centre Trend Analysis Dashboard

Customer Satisfaction:

The overall customer satisfaction rate is quite high at **81.08%**.

Call Volume:

- A total of **4054 calls** were answered, while **946 calls** were abandoned, indicating a need to possibly improve response times or staffing to reduce abandoned calls.

Response Efficiency:

- The average speed of answer is **67.52 seconds**, which could be optimized for better customer experience.

Agent Performance:

- There is a variation in agents' performance with respect to average handle time and total calls answered. Strategies could be implemented to improve efficiency across all agents.

Calls per Hour:

- The efficiency of calls per time to calls per hour varies among agents, suggesting that some may require additional training or support.

For Churn Dashboard

Churn Rate:

- The company is experiencing a churn rate of **26.54%**, which is quite significant.

Customer Demographics:

- There is a higher churn among male customers, indicating a possible area to investigate for targeted retention strategies.

Customer Tenure:

- The average customer tenure is **32.37 months**, suggesting moderate loyalty but also room for improvement in long-term retention.

Support Tickets:

- A considerable number of tech and admin support tickets have been raised, which could be indicative of service issues affecting customer satisfaction.

Revenue Analysis:

- The total revenue stands at **\$16.06M**, with a monthly contribution of **\$0.46M** from PWC, highlighting the revenue impact of churn.

Contract Preferences:

- Most customers prefer month-to-month contracts with paperless billing and electronic payments, which could influence the development of tailored service packages.

Service Utilization:

- Many customers do not opt for additional services like online security or tech support, which presents an opportunity to upsell these services.