Trainity Project 8

Project Description

This project focuses on Customer Experience (CX) analytics, particularly in the context of an inbound calling team within an insurance company named ABC. The primary objectives of this project are to analyze the inbound call data and derive insights to improve customer service and optimize manpower allocation. The project aims to help ABC Insurance Company enhance its customer service, reduce abandon rates, and efficiently allocate manpower resources to meet customer demand during different time periods.

Approach

- I started by understanding the dataset provided, which includes information about inbound calls.
- Examined the data structure, columns, and any missing values.
- Ensured that the data is clean and suitable for analysis.

1. Average Call Duration:

- Used a pivot table to group the data by time buckets and calculate the average call duration.
- Presented the results in a tabular and graph format.

2. Call Volume Analysis:

- Used a pivot table to group the data by time buckets and calculate the count call duration.
- Created a visual representation of call volume using a bar chart.

3. Manpower Planning:

- Calculated the number of agents required to reduce the abandon rate to 10% based on the assumptions given.
- Allocated the minimum number of agents required for each time bucket.

4. Night Shift Manpower Planning:

- Calculated the number of agents required during 9pm and 9am, while keeping the abandon rate to 10%.
- Then, allotted the agents required for each time bucket between 9pm and 9am.

Tech-Stack Used

Microsoft Excel - Excel was the primary software used for data analysis, and visualization. Its functions and features were employed for calculations, data cleaning, and conducting analysis. Pivot tables were used for analysis and various charts like Column charts were used for visualization.

Insights

Key Findings from the Project:

1. Average Call Duration:
   - The average call duration for each time bucket varied throughout the day.
   - The average duration of calls is the highest during 7pm - 8pm and the average calls received is least between 12pm - 1pm.

2. Call Volume Analysis:
   - The highest call volumes were typically observed during morning hours.
   - The most calls received are between 11am - 12pm and the least number of received calls are during 8pm - 9pm.

3. Manpower Planning:
   - To reduce the abandon rate to 10%, additional agents were needed during peak call hours.
   - The minimum agents required for each time bucket was then calculated.

4. Night Shift Manpower Planning:
   - To maintain a maximum abandon rate of 10% during nighttime hours, agents needed to be allocated.
   - The minimum agents required for each time bucket was then calculated.

Result

This project provided a comprehensive view of ABC Insurance Company's call volume trends, average call durations, and workforce optimization needs. It contributed to a deeper understanding of the factors influencing customer experience and demonstrated the value of data analytics in making strategic decisions for a CX team.

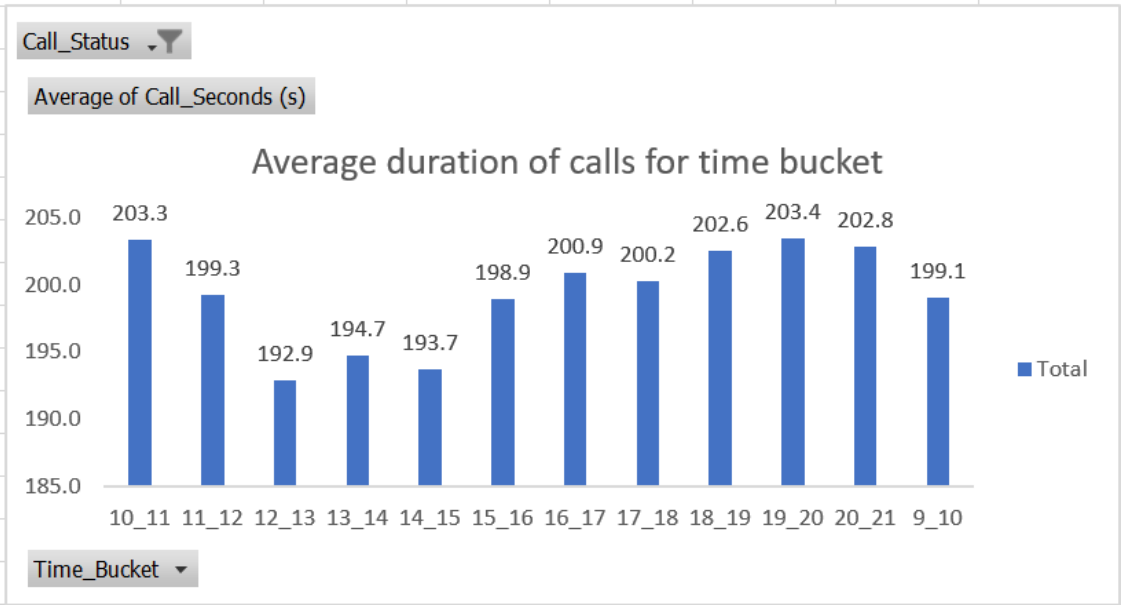
Excel sheet link - Excel_P8.xlsx

Video presentation link - https://drive.google.com/file/d/13RuHzXVAowJUAI_0QDHcNAIFwIGifwna/view?usp=sharing

Data Analytics Tasks:

1. **Average Call Duration: Determine the average duration of all incoming calls received by agents. This should be calculated for each time bucket.**
   Your Task: What is the average duration of calls for each time bucket?

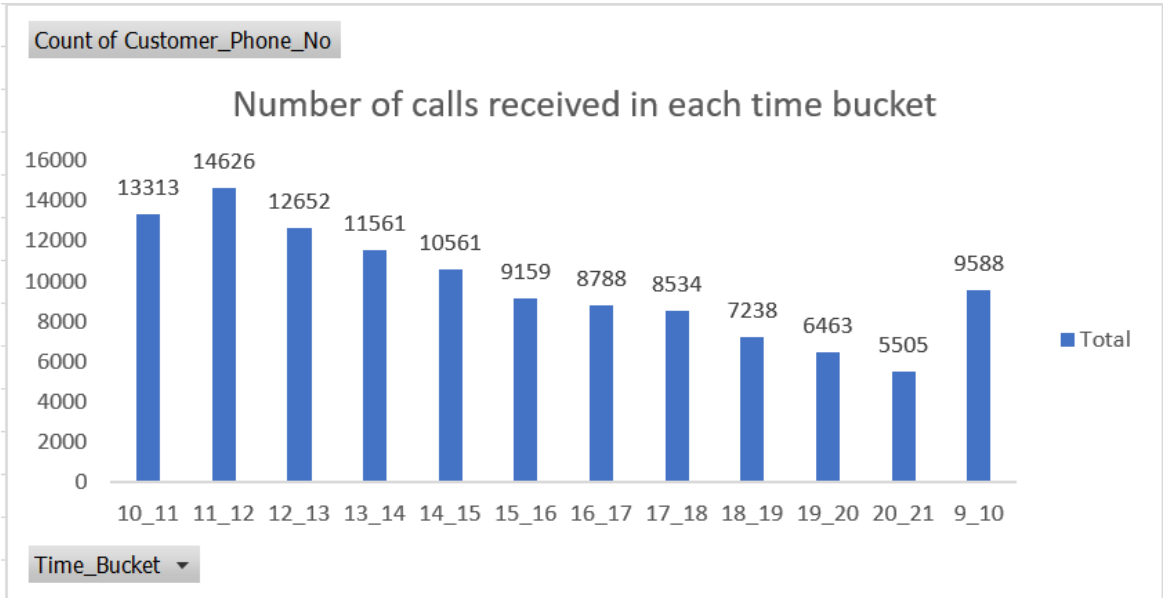
Call_Status	answered
Row Labels	**Average of Call_Seconds (s)**
10_11	203.3310302
11_12	199.2550234
12_13	192.8887829
13_14	194.7401744
14_15	193.6770755
15_16	198.8889175
16_17	200.8681864
17_18	200.2487831
18_19	202.5509677
19_20	203.4060725
20_21	202.845993
9_10	199.0691057
Grand Total	**198.6227745**



The average duration of calls is the highest during 7pm - 8pm and the average calls received is least between 12pm - 1pm.

2. **Call Volume Analysis: Visualize the total number of calls received. This should be represented as a graph or chart showing the number of calls against time. Time should be represented in buckets (e.g., 1-2, 2-3, etc.).**
   Your Task: Can you create a chart or graph that shows the number of calls received in each time bucket?

Row Labels	Count of Customer_Phone_No
10_11	13313
11_12	14626
12_13	12652
13_14	11561
14_15	10561
15_16	9159
16_17	8788
17_18	8534
18_19	7238
19_20	6463
20_21	5505
9_10	9588
Grand Total	**117988**



The most calls received are between 11am - 12pm and the least number of received calls are during 8pm - 9pm.

3. **Manpower Planning**
   Your Task: What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

Pivot table shows the sum of call_seconds, which is converted to hrs (sum of hrs for all agents)

Row Labels	Sum of Call_Seconds (s)	Sum of call (hrs)
01-Jan	676664	187.9622222
Grand Total	**676664**	

Based on the assumptions, the actual calling hrs are calculated, which is then used to know the number of agents when the abandon rate is 30%

Assumption	
Total working hrs	9
Break	1.5
Actual working hrs	7.5
Actual calling hrs	4.5
Sum of call hrs	187.96
Per agent calling hrs	4.5
No of agents	42

Then the number of agents required to make the abandon rate to 10% is calculated.

Agents	Percent
42	70
54	90

The total number of agents needed to make the calls abandon rate to 10% is 54. Lastly the minimum number of agents required in each time bucket to reduce the abandon rate to 10% is found.

Row Labels	Count of Call_Seconds (s)	Percent	Minimum Agents Required
10_11	13313	0.11	6
11_12	14626	0.12	7
12_13	12652	0.11	6
13_14	11561	0.10	5
14_15	10561	0.09	5
15_16	9159	0.08	4
16_17	8788	0.07	4
17_18	8534	0.07	4
18_19	7238	0.06	3
19_20	6463	0.05	3
20_21	5505	0.05	3
9_10	9588	0.08	4
Grand Total	117988	1.00	54

4. **Night Shift Manpower Planning: Customers also call ABC Insurance Company at night but don't get an answer because there are no agents available. This creates a poor customer experience. Assume that for every 100 calls that customers make between 9 am and 9 pm, they also make 30 calls at night between 9 pm and 9 am. The distribution of these 30 calls is as follows:**
   Your Task: Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%.

First we calculated the average of all incoming calls and using that the average calls during 9pm and 9am was calculated(30% of total). With the previously calculated working hrs per agent, average call duration, we calculated the number of agents needed, while keeping the abandon rate at 10%.

Working hrs per agent	4.5
Average call duration	198.62
Average of calls	5130
Average of calls during night (30% of total calls)	1539
Average hrs needed to answer calls keeping average abandonment rate 10%	76
Number of agents needed	17

The total agents needed during 9pm and 9am are 17. Then the agents required as per the time bucket was calculated as shown.

Time bucket	Calls	Percentag	Agents needed
9pm- 10pm	3	0.1	2
10pm - 11pm	3	0.1	2
11pm- 12am	2	0.1	1
12am- lam	2	0.1	1
1am - 2am	1	0.0	1
2am - 3am	1	0.0	1
3am - 4am	1	0.0	1
4am - 5am	1	0.0	1
5am - 6am	3	0.1	2
6am - 7am	4	0.1	2
7am - 8am	4	0.1	2
8am - 9am	5	0.2	3
Total	30	1.0	17