ABC Call Volume Trend Analysis

Description:

ABC is a call centre which has a customer experience team for the voice process. Typically, these teams fulfil various roles and responsibilities such as : customer experience programs (CX programs), digital customer experience, design and processes, internal communications, voice of the customer(VoC), user experiences, customer experience management, journey mapping, nurturing customer interactions, customer success, customer support, handling customer data, learning about the customer journey. I have been provided with data of ABC call centre for last 23 days and I should analyze the data and help the company answer some of the business questions.

Tech-Stack Used:

Microsoft Excel: Used for data cleaning, analysis, and visualization.

Project Approach:

We structured our analysis into five main steps:

1. Understanding The Data : Understanding the data and the features it contains to know what impact are we expecting.
2. Cleaning The Data : Handling the irregularities like the null values, outliers , missing values, irrelevant data etc.
3. Analyzing The Data : Analyzing the data, various relations between the features to derive conclusions.
4. Visualizing The Data : Visualize and create a dashboard.
5. Presentation : We show our design to client and wait for feedback.

Dataset Description

The dataset contains information on various car models and their specifications.
Here is a brief overview of the dataset:

- **Number of Rows:** 1,17,988
- **Number of variables:** 13

The variables in the dataset are:

- **Agent_Name:** A categorical column containing names of agents attending the phone call.
- **Agent_ID:** Contains agent id.
- **Customer_Phone_No:** Contains the contact number of customers.
- **Queue_Time(Secs):** Contains the seconds customer has waited before the agent has picked the call.
- **Date_&_Time:** Used for time intelligence
- **Time:** Used for time intelligence
- **Time_Bucket:** Used for time intelligence
- **Duration(hh:mm:ss):** Contains duration of the call
- **Call_Seconds (s):** Duration of call in seconds
- **Call_Status:** Contains information about whether the call is being answered or abondoned
- **Wrapped _By:** Contains information about call is answered by agent or auto wrapped.

Cleaning The Data

- Cleaning the data is an crucial step in any data analysis as it ensures the data is accurate, reliable and consistent .
- Without data cleaning ,Our data analysis will be inaccurate ,incomplete and inconsistent which can lead to serious consequences in decision making.
- There are some steps involved in Cleaning the data. Those are :
    1. Remove/replace all the null values by dropping the whole row.
    2. Delete duplicate rows.

3. Correct format of the columns.

The Cleaned Dataset is provided below for reference:
https://docs.google.com/spreadsheets/d/1G6mxj65qEXVaBBa-2eJwcbQkP0whd9vv/edit?usp=drive_link&ouid=107390593583715222805&rtpof=true&sd=true

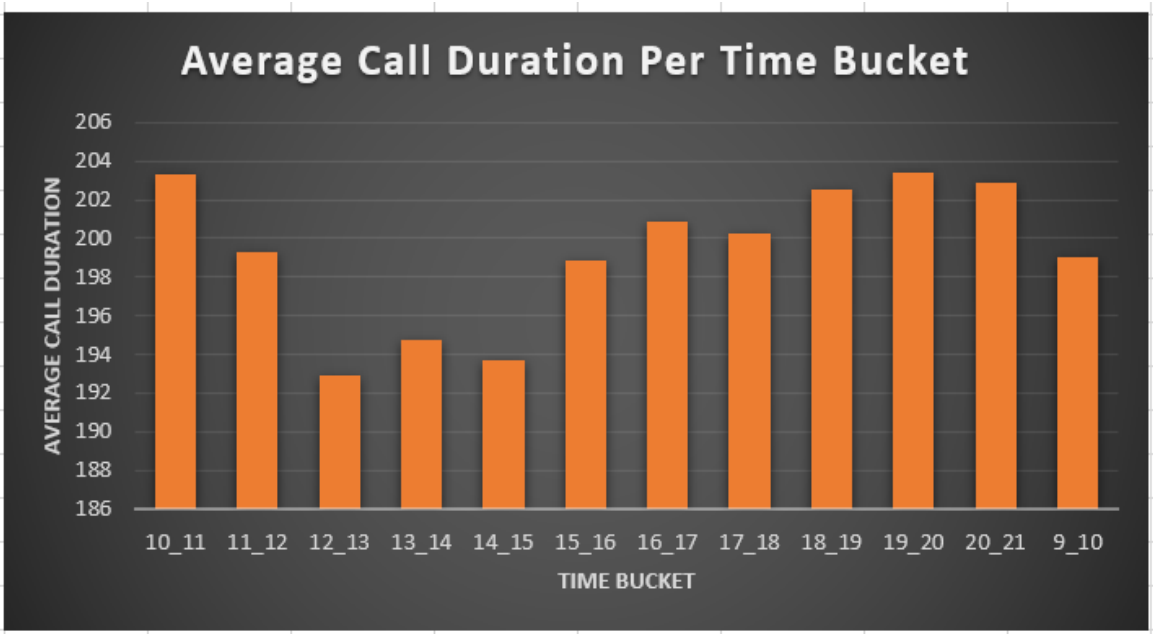
Analysis

Analysis is done on following points:

1. Average call duration
2. Call volume analysis
3. Manpower planning
4. Night shift manpower planning

Task 1: Average call duration:
What is the average duration of calls for each time bucket?

Call_Status	answered
Time Bucke	**Average of Call_Seconds (s)**
10_11	203.33
11_12	199.26
12_13	192.89
13_14	194.74
14_15	193.68
15_16	198.89
16_17	200.87
17_18	200.25
18_19	202.55
19_20	203.41
20_21	202.85
9_10	199.07
Grand Total	**198.62**

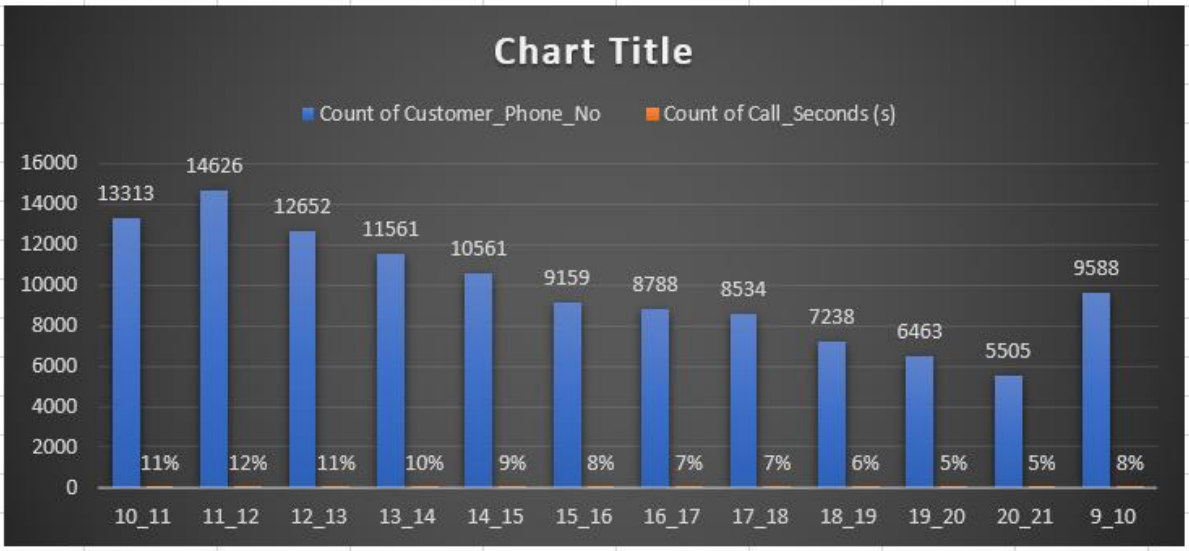


Insights:

- Based on the analysis, total average call duration answered by agents is 198.62 seconds.
- Further analysis reveals that, maximum average duration of calls for incoming calls is at 10_11 AM and 7_8 PM.
- Based on analysis minimum average call duration for incoming calls received by agents is 12_1 PM.

Task 2: Call Volume Analysis

Can you create a chart or graph that shows the number of calls received in each time bucket?



Insights:

- Based on analysis, highest number of calls received is between 12 PM and 1 PM
- Further analysis also reveals that least number of calls answered is between 8 PM and 9 PM.

Task 3: Manpower Planning

What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

Count of Duration(hh:mm:ss)	Call_Status			
Date&Time	abandon	answered	transfer	Grand Total
01-Jan	684	3883	77	4644
02-Jan	356	2935	60	3351
03-Jan	599	4079	111	4789
04-Jan	595	4404	114	5113
05-Jan	536	4140	114	4790
06-Jan	991	3875	85	4951
07-Jan	1319	3587	42	4948
08-Jan	1103	3519	50	4672
09-Jan	962	2628	62	3652
10-Jan	1212	3699	72	4983
11-Jan	856	3695	86	4637
12-Jan	1299	3297	47	4643
13-Jan	738	3326	59	4123
14-Jan	291	2832	32	3155
15-Jan	304	2730	24	3058
16-Jan	1191	3910	41	5142
17-Jan	16636	5706	5	22347
18-Jan	1738	4024	12	5774
19-Jan	974	3717	12	4703
20-Jan	833	3485	4	4322
21-Jan	566	3104	5	3675
22-Jan	239	3045	7	3291
23-Jan	381	2832	12	3225
Grand Total	34403	82452	1133	117988
Average no. of Call Status	1496	3585	49	5130
Call Status in %	29%	70%	1%	100%
Agent's actual working hour(60% of 7.5 hours)	4.5			
Average of call duration in seconds	199			
Hours needed for 90%	255			
Total no. of agents required	57			

Insights:

- Total number of agents required to reduce the abandon rate to 10% is 57

Task 4: Night Shift Manpower Planning

Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%.

Date&Time	abandon	answered	transfer	Grand Total
01-Jan	684	3883	77	4644
02-Jan	356	2935	60	3351
03-Jan	599	4079	111	4789
04-Jan	595	4404	114	5113
05-Jan	536	4140	114	4790
06-Jan	991	3875	85	4951
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Grand Total	34403	82452	1133	117988
Average no. of call status	1496	3585	49	5130
Call status in %	29%	70%	1%	100%
Agent's working hour(60% 0f 7.5 hours)	4.5			
Average of call duration in sec	199			
Average of no. of call at night(30%)	1539			
For 90% call rate at night	76			
Total no. of agents needed in night shift	17			

Insights:

- Total number of agents required to answer the call at night is 17

The Results Dataset Link:-

https://docs.google.com/spreadsheets/d/1L84b7MEPtZjomc6Li56lyQ0qKi3BXJkW/edit?usp=drive_link&ouid=107390593583715222805&rtpof=true&sd=true

Conclusion:

- Company can divide workforce into three shifts to ensure 24/7 availability for addressing customer's queries and concerns.
- Based on analysis incoming calls in evening are less. So company can optimize workforce by reducing the number of agents in evening for call handling.
- Company can hire 17 agents who will be available during night hours from 9 PM to 9 AM to handle the calls or shift some of the day workers to the night shift.
- During the analysis there were outliers in data but removing the outliers can lead to different outcomes.
- These insights provide the company with actionable strategies for optimizing workforce allocation, enhancing customer service efficiency, and ensuring continuous availability to address customer needs.