ABC Call Volume Trend Analysis

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Project 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 the data of ABC call centre for the last 23 days and I should analyze the data and help the company answer some of the business questions.

Approach

- Check the data for consistencies.
- Create a table in Excel.
- Create extra columns if required.
- Create Pivot Tables and charts.
- Submit a report to the management team to make decisions using the insights.

Tech Stack Used

Google Sheets - To wrangle with the data and perform data Analysis.

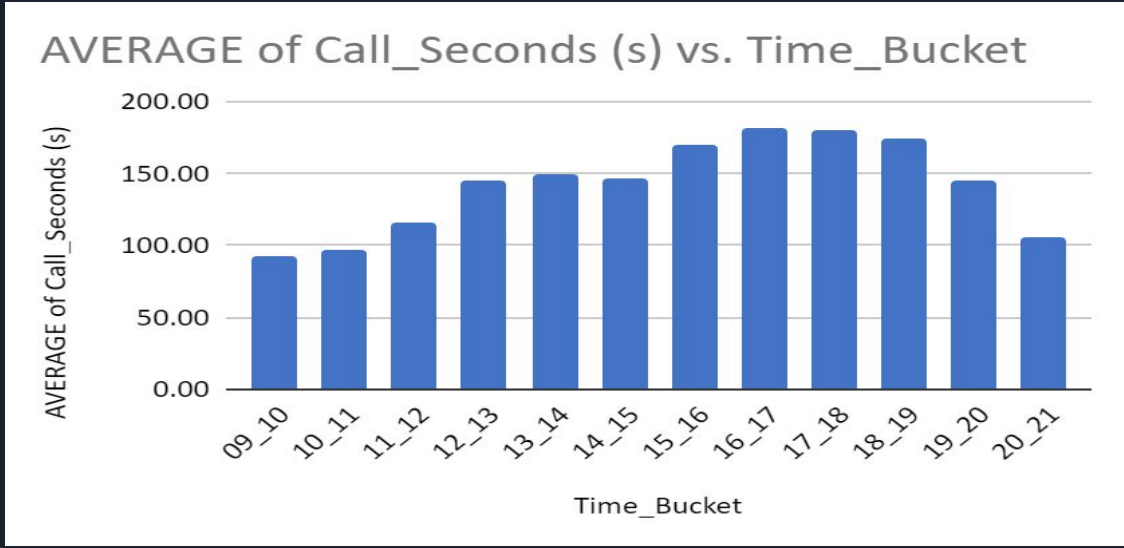
About the Dataset

- There are 117989 rows and 13 columns.
- Agent name is a categorical column containing names of the agents attending the phone call.
- Agent Id column contains the agent id and they also contain a lo of null values.
- Customer column contains the contact number of the customer.
- Queue time contains the seconds customer has waited before the agent has picked the call.
- **Date_&_Time, Time & Time_Bucket** are used for time intelligence.
- Duration and Call_seconds contains the duration of the call.
- Call Status and Wrapped are also categorical columns.

Cleaning the dataset

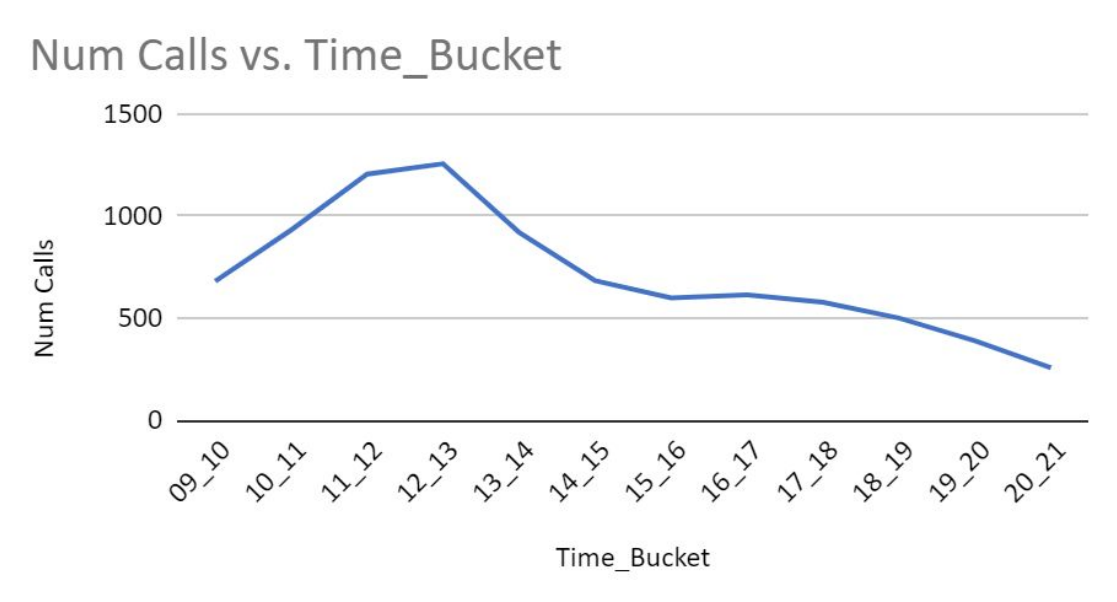
- The agent Name and Agent Id has null values.
- The columns Ringing and IVR duration are not used since ringing has only one variable and IVR duration is not of any use to our analysis.

1. Average Call time duration for each time bucket



It can be seen that the average call duration increases from 9 to 5 and then decreases..

2. No of Calls for each time bucket



It can be seen that the Number of calls in a day increases from 9 to 12 and then it starts decreasing..

3. Decrease the drop rate

Executive name	Dropped	Answered	Transferred
#N/A	34198		
Grand Total	**34403**	**82452**	**1133**

It can be seen that out of 34403 calls dropped, 34198 calls have not been answered by anyone. This can also mean that the agents were busy in any other calls and so, they were unable to tend to these calls.
This means that we need to increase the man power to reduce the drop rate.

3. Decrease the drop rate

Time_Bucket	Number of agents	Abandon Rate	Calls Each Day	Avg Call Duration	Avg Queue Time
09_10	42	53.70%	416.87	92.01	82.86
10_11	51	51.91%	578.83	97.42	83.25
11_12	59	41.21%	635.91	116.78	72.32
12_13	60	24.29%	550.09	144.73	41.66
13_14	58	22.64%	502.65	149.54	41.80
14_15	60	23.44%	459.17	146.97	43.60
15_16	58	13.25%	398.22	169.90	29.88
16_17	58	8.50%	382.09	181.44	23.54
17_18	58	9.18%	371.04	179.72	23.75
18_19	59	12.89%	314.70	174.32	34.09
19_20	52	28.59%	281.00	144.58	58.69
20_21	27	47.68%	239.35	105.95	75.28
Grand Total	**66**	29.16%	5,129.91	139.53	**52.17**

It can be inferred that the abandon rates are high on particular times of a day and lowest on a particular time in a day.
Even though the calls are low during the 9_10 bucket, the drop rate is very high.
We have the average call duration in each time bucket. Using that, we can calculate approximately how much time the call centre agents are spending talking to the customers in total in a particular time bucket.
By using that data, we can arrive at the approximate number of agents required to have a drop rate lesser than 10 %.
It can also be seen that the time buckets in which the avg call duration is high and avg queue time is low have lesser drop rates.

Not: A tolerance level needs to be added in every calculation to account for the errors.

3. Decrease the drop rate

Time_Bucket	9 Shift	10 Shift	12 Shift	Agents Req	Agents Req Calculated
09_10	50	0	0	50	44.88
10_11	50	20	0	70	64.04
11_12	50	20	0	70	73.96
12_13	25	10	40	75	62.65
13_14	0	20	40	60	58.47
14_15	50	0	20	70	53.57
15_16	25	20	40	85	48.84
16_17	50	20	0	70	47.60
17_18	50	10	20	80	46.01
18_19	0	20	30	50	39.48
19_20	0	0	40	40	34.78
20_21	0	0	30	30	26.58

Agents Required is calculated by using the formula

Agents Req Calculated = 1.1 * calls Each Day * 2 * (avg call duration + avg queue time)

where 1.1 and 2 are tolerance of no of calls and waiting time respectively.

So the total man power required = 9 AM shift + 10 AM Shift + 12 PM Shift = 50 + 20 + 40 = 110

New Manpower to be added = req man power - available employees = 110 - 66

= 44

It is advised to add 44 new employees to reduce the abandon rate from 30 % to 10 %

4. Organize Night Calls

Men required can be calculated from the same formula given in the previous slide. For the night calls too, men required can be found from the same formula. Calls/ day can be found from the data for the whole 24 hours. A shift plan has been drafted in which the required number of agents in that specific period of time has been used to carefully decided based on the expected number of calls along with some tolerance.

8 AM Shift Schedule

Time Bucket	Men Required	Total Men	8 AM Shift	5 PM Shift	2 AM Shift
08_09	42.93	80	60	0	20
09_10	44.88	90	70	0	20
10_11	64.04	70	70	0	0
11_12	73.96	70	70	0	0
12_13	62.65	60	60	0	0
13_14	58.47	60	60	0	0
14_15	53.57	60	60	0	0
15_16	48.84	50	50	0	0
16_17	47.60	50	50	0	0

4. Organize Night Calls

5 PM Shift Schedule

Time Bucket	Men Required	Total Men	8 AM Shift	5 PM Shift	2 AM Shift
17_18	46.01	50	0	50	0
18_19	39.48	50	0	50	0
19_20	34.78	50	0	50	0
20_21	26.58	50	0	50	0
21_22	25.76	25	0	25	0
22_23	25.76	25	0	25	0
22-00	17.17	50	0	50	0
00_01	17.17	50	0	50	0
01_02	8.59	70	0	50	20

2 AM Shift Schedule

Time Bucket	Men Required	Total Men	8 AM Shift	5 PM Shift	2 AM Shift
02_03	8.59	70	0	50	20
03_04	8.59	20	0	0	20
04_05	8.59	10	0	0	10
05_06	8.59	10	0	0	10
06_07	25.76	20	0	0	20
07_08	34.34	20	0	0	20
08_09	34.34	20	0	0	20
02_03	42.93	80	60	0	20
09_10	44.88	90	70	0	20

4. Organize Night Calls

`So, the total number of man power needed is 8 AM shift + 5 PM Shift + 2 AM Shift = 70 + 50 + 20 = 140.

After hiring 140 - 66 = 74 agents, we can expect the call abandon rates to lesser than 10 %

To view my sheet, click here

Result

I have learned how to analyze the call centre data and report to the management.

I have also learned to use pivot table and pivot charts more effectively.

Thank You