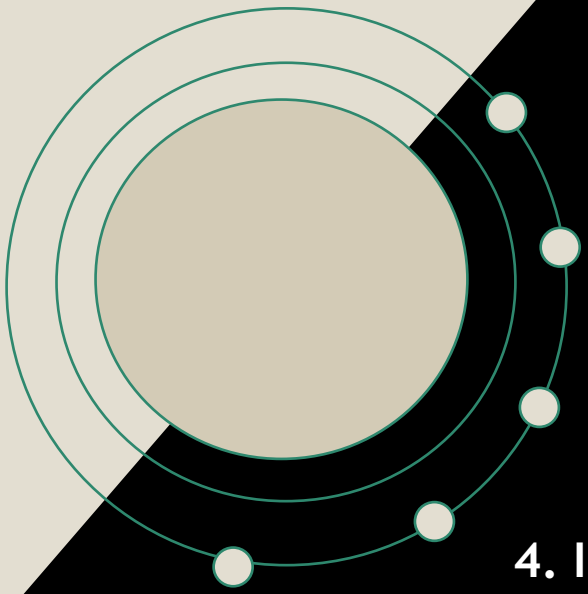
ABC Call Volume Trend Analysis



1. PROJECT DESCRIPTION
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1) Project Description

This project is about how company uses its analytical skills to target audiences from many types of media platform to convert them as their customers at low cost.

I am provided with **Customer Experience (CX) Inbound calling team for 23 days (Call_Volume_Trend_Analysis)** data sets, tables from which I must derive certain insights out of it and answer the questions. so it will be easy for me to handle it using **Excel** and provide a detailed report

2) Approach

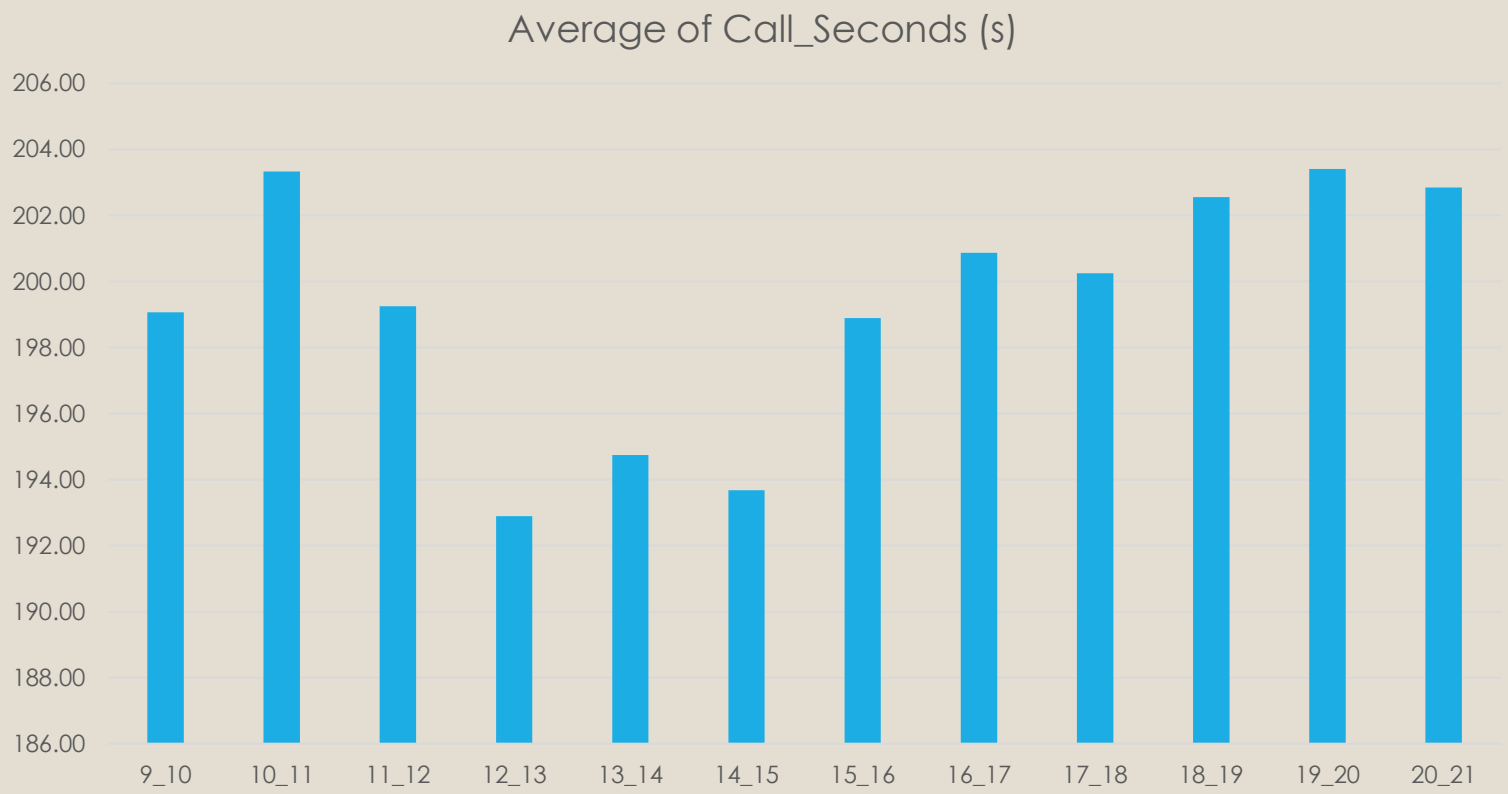
1. I revised 2-3 times the Description of Final Project-4 (ABC Call Volme Trend Analysis).
2. Collected the **Call_Volume_Trend_Analysis** Dataset.
3. Inserted/Loaded it into Excel.
4. Finally analyzed the dataset and attached results for the given questions.

3) Tech-Stack Used

- I have used **Excel** software.
- Excel is a tool **for organizing and performing calculations** on data.
- It can analyze data, calculate statistics, generate **pivot table**, and represent data as **charts or graphs.**
- I have used **Excel 2021 version** to complete this project.

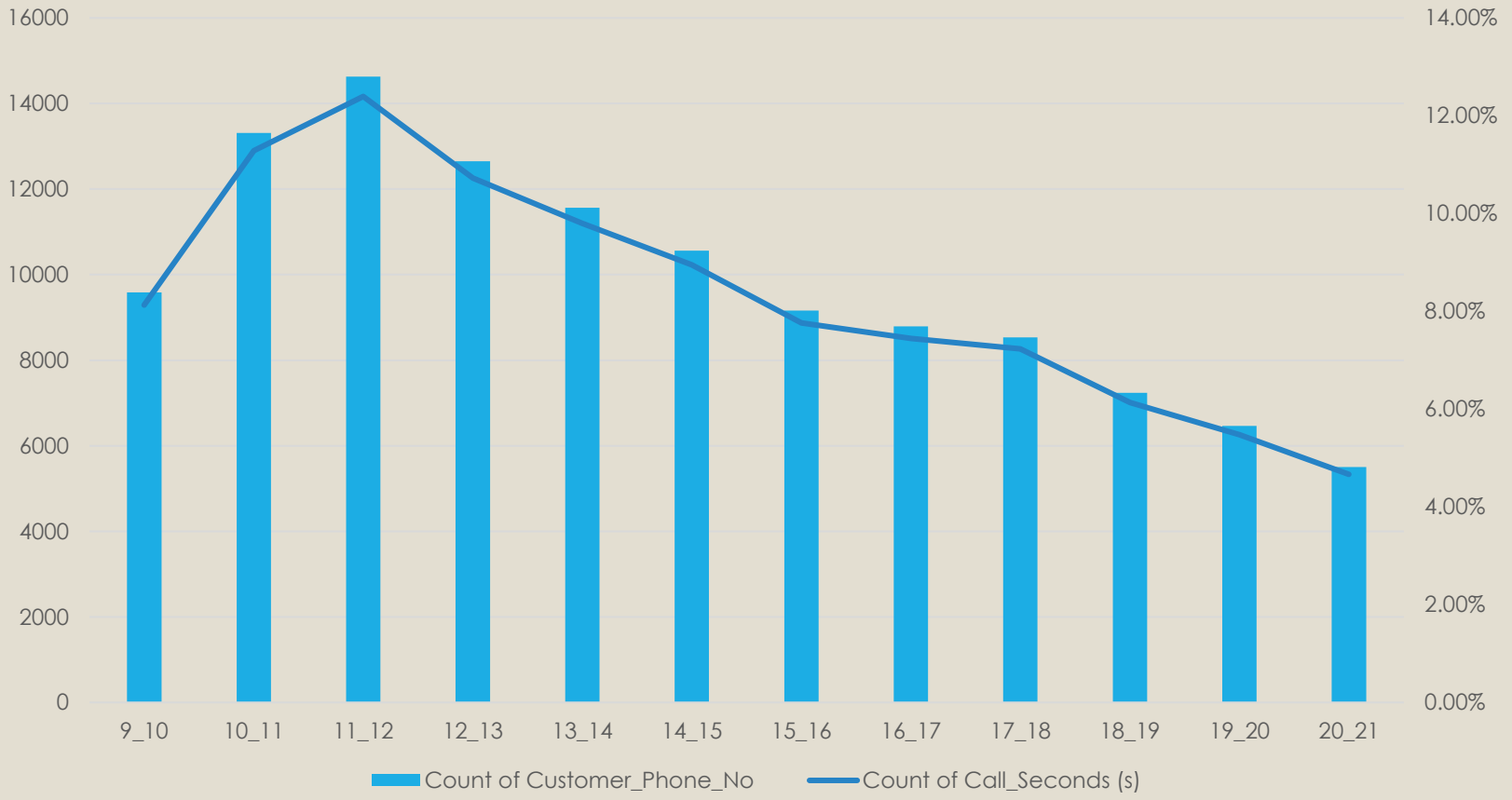
4) Insights

1) Calculate the average call time duration for all incoming calls received by agents (in each Time Bucket).



- I have put Time_Bucket in Row Section and computed average of Call_Seconds in Value Section and plotted a Bar Graph.
- Agents answer calls for an average of 198.6 seconds.
- Average call time duration is highest between 7pm-8pm with value of 203.41 and 10 am to 11 am with value of 203.33.
- The average call time duration is least between 12am and 1 pm with value of 192.89.

2) Show the total volume/ number of calls coming in via charts/ graphs [Number of calls v/s Time]. You can select time in a bucket form (i.e. 1-2, 2-3, …..)

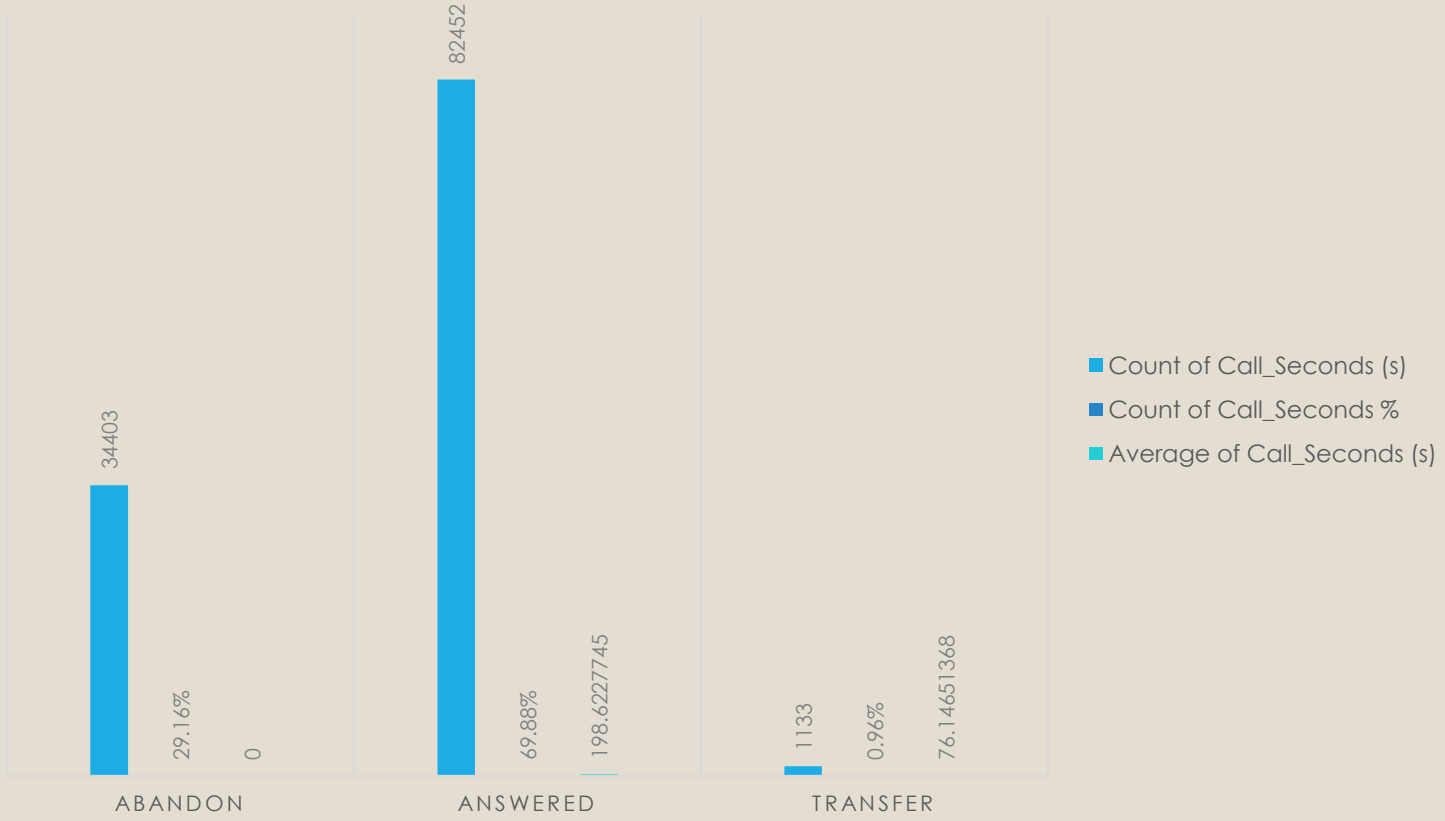


- I have put Time_Bucket in Row Section and computed count of Customer_Phone_No and count of Call_Seconds in Value Section and plotted Clustered Cloumn chart where

  Bar Graph represents Count of Customer_Phone_No

  Line Graph represents Count of Call_Seconds
- Customers call the most in between 11am to 12am.
- Customers call the least in between 8pm to 9pm.

3) As you can see current abandon rate is approximately 30%. Propose a manpower plan required during each time bucket [between 9am to 9pm] to reduce the abandon rate to 10%. (i.e. You have to calculate minimum number of agents required in each time bucket so that at least 90 calls should be answered out of 100.)



Assumption				
	Time (in Hrs)			Time (in Mins)
The ABC Company's Total Working Hours	9		Morning Break	15
Break	1.5		Lunch	60
IT DownTime	0.5		Afternoon Break	15
Meetings/Discussions	1			
Agent's actual Working Hours	5			

Date	Sum of Call_Seconds (s)	Sum of Call_Seconds (s)2
01-Jan	676664	187.96

- Total agents working is calculated by average calls on single day divided by total time spend by an agent in a single day.
  Total Agent = 187.96/5 = 37.59 or 38
- If Agents are working for 5 hrs a day and 60% of calls are answered. If the ABC Company want 90% of calls to get connected, using unitary method we can determine how many agents are needed.
  Agents Required = 30%-20% = 10%

Additional Agents Required – 20%/30%*38 = 25.33 or 26 Approx

Time Bucket	Count of Call Sec	Count of Call Sec	Manpower Required
9_10	8.13%	0.085	10 (approx.)
10_11	11.28%	0.116	12 (approx.)
11_12	12.40%	0.127	13 (approx.)
12_13	10.72%	0.116	12 (approx.)
13_14	9.80%	0.106	11 (approx.)
14_15	8.95%	0.095	10 (approx.)
15_16	7.76%	0.084	9 (approx.)
16_17	7.45%	0.074	8 (approx.)
17_18	7.23%	0.074	8 (approx.)
18_19	6.13%	0.063	7 (approx.)
19_20	5.48%	0.053	6 (approx.)
20_21	4.67%	0.053	6 (approx.)
Total	56		

- I have created a pivot table with Call_Status in Row Section and count of Call_Seconds and in percentage as well and Average of Call_Seconds. Then plotted a Bar Graph.
- To calculate I have created a pivot table with Date & Time in Row Section and Sum of Call_Seconds in value Section. As the values are in Seconds I have divided them with 3600 to convert them to Hours.
- 29.16% of the calls are abandoned, 69.88% of the calls are answered and 0.96% of the call are transferred.
- To achieve a 90% call connection rate (instead of the current 60%), we calculate the number of additional agents needed. Applying the unitary method, we find that approximately 56 agents would be required.

- 56 Agents are needed to answer 90% of calls per day.

4) Let's say customers also call this ABC insurance company in night but didn't get answer as there are no agents to answer, this creates a bad customer experience for this Insurance company. Suppose every 100 calls that customer made during 9 Am to 9 Pm, customer also made 30 calls in night between interval [9 Pm to 9 Am] and distribution of those 30 calls are as follows

Distribution of 30 calls coming in night for every 100 calls coming in between 9am - 9pm (i.e. 12 hrs slot)											
9pm- 10pm	10pm - 11pm	11pm- 12am	12am- 1am	1am - 2am	2am - 3am	3am - 4am	4am - 5am	5am - 6am	6am - 7am	7am - 8am	8am - 9am
3	3	2	2	1	1	1	1	3	4	4	5

I have created a pivot table with Date_&_Time in Row Section, count of Customer_Phone_No and Call_Status in Column Section. Average calls in DayTime is calculated.

Using the above result Average calls in NightTime is calculated (i.e 30% of Average call in DayTime)

Using Average calls in NigthTime I have calculated Additional Hour required (i.e Average calls in NightTime * Answered Average of Call_Second * 0.9 / 3600)

Using above result I have calculated Additional Agents Required. (i.e Additional Hour required /60% of 7.5hrs)

Average call in DayTime (9am to 9pm)	5130
Average call in NightTime (9pm - 9am)	1539
Additional Hour required	76.4
Additional Agents	17

Time	Call Count	Time Distribution	Agents Required
9pm - 10pm	3	0.10	2
10pm - 11pm	3	0.10	2
11pm - 12pm	2	0.07	1
12pm - 1am	2	0.07	1
1am - 2am	1	0.03	1
2am - 3am	1	0.03	1
3am - 4am	1	0.03	1
4am - 5am	1	0.03	1
5am - 6am	3	0.10	2
6am - 7am	4	0.13	2
7am - 8am	4	0.13	2
8am - 9am	5	0.17	3
Total	30	1	19

- Time Distribution is calculated by dividing each Calls Distribution by Total Calls.
- The number of agents required for each Time_Bucket is calculated by Additional agents required * Time Distribution.

- For the night shift, the ABC Company should hire 17 agents.
- Between 1 am to 5 am, customers call the least. As a result, the ABC Company can use a few agents to answer calls at that time.
- In order to answer the most calls, the Head can switch some Agent's shifts from 5 am to 2 pm and 2 pm to 11 pm as most of the customers call in these time.

5) Result

This project helped me to understand how companies like ABC uses their analytical skills to target the audience and to convert them to their customers at a low cost.

I have learned how companies strives to provide customer satisfaction and how an analyst can make an positive/negative impact on customer service.

Link To Excel Sheet - Click To See