

# ABC CALL VOLUME TREND ANALYSIS



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# WHOA!

24/7




**I am PRAJJWAL PANDEY an upcoming Data Scientist. Diving deep into the exciting World of Data!**



01

# ABOUT THE PROJECT






Customer experience (CX) is the process of improving the customer experience across all touchpoints. A CX team is responsible for understanding customer needs, improving customer journeys, and ensuring consistent brand experiences. CX teams typically fulfil various roles and responsibilities, including:

- 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
- Interactive Voice Response (IVR)
- Robotic Process Automation (RPA)
- Predictive Analytics
- Intelligent Routing

Inbound customer support is a type of customer support that handles incoming calls from customers. This type of support is typically provided by customer service representatives who are responsible for resolving customer issues and providing information about products or services.

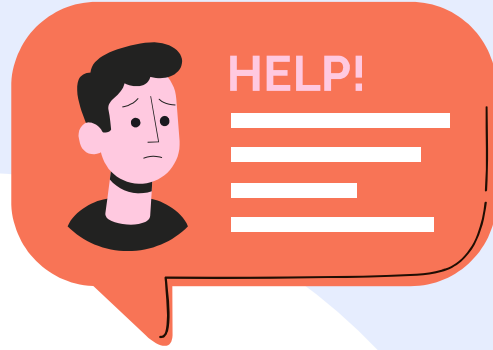


02



MS EXCEL

# TECH-STACK USED



03

# Approach and Insights

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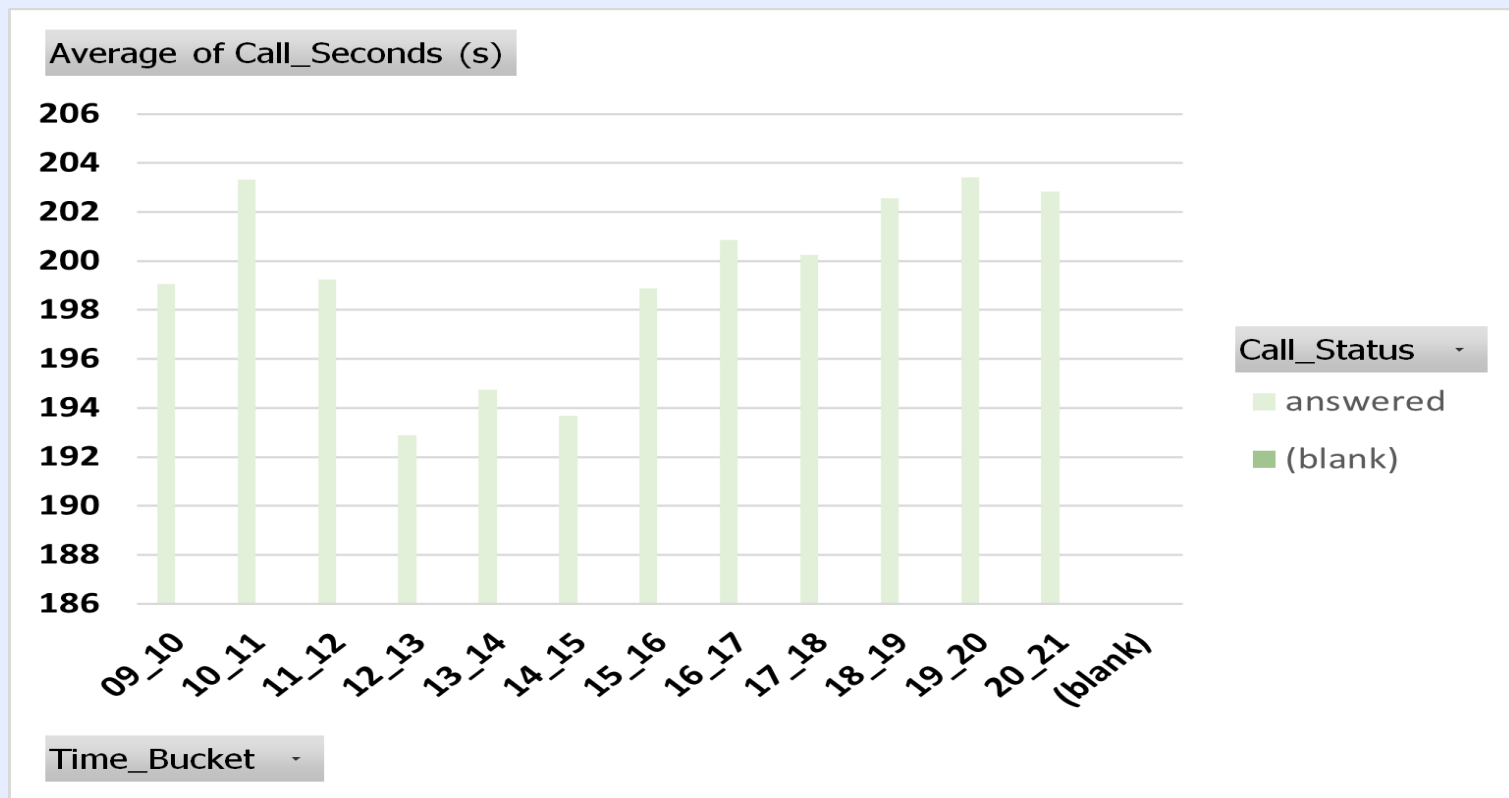
# Problem A

**Calculate the average call time duration for all incoming calls received by agents (in each Time\_Bucket).**

- We can calculate the average call duration for incoming calls received for each time bucket by using the pivot table, and by filtering only the answered calls from the Call\_Status column.
- The total average call duration for incoming calls received by the agent is 198.62 seconds.
- The average call duration for incoming calls received for each time bucket is given.

Average of Call_Seconds (s)		Column Labels
Row Labels	answered	(blank) Grand Total
09_10	199.0691057	199.0691057
10_11	203.3310302	203.3310302
11_12	199.2550234	199.2550234
12_13	192.8887829	192.8887829
13_14	194.7401744	194.7401744
14_15	193.6770755	193.6770755
15_16	198.8889175	198.8889175
16_17	200.8681864	200.8681864
17_18	200.2487831	200.2487831
18_19	202.5509677	202.5509677
19_20	203.4060725	203.4060725
20_21	202.845993	202.845993
(blank)		
Grand Total	198.6227745	198.6227745

# GRAPH



# Problem B

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, ....)

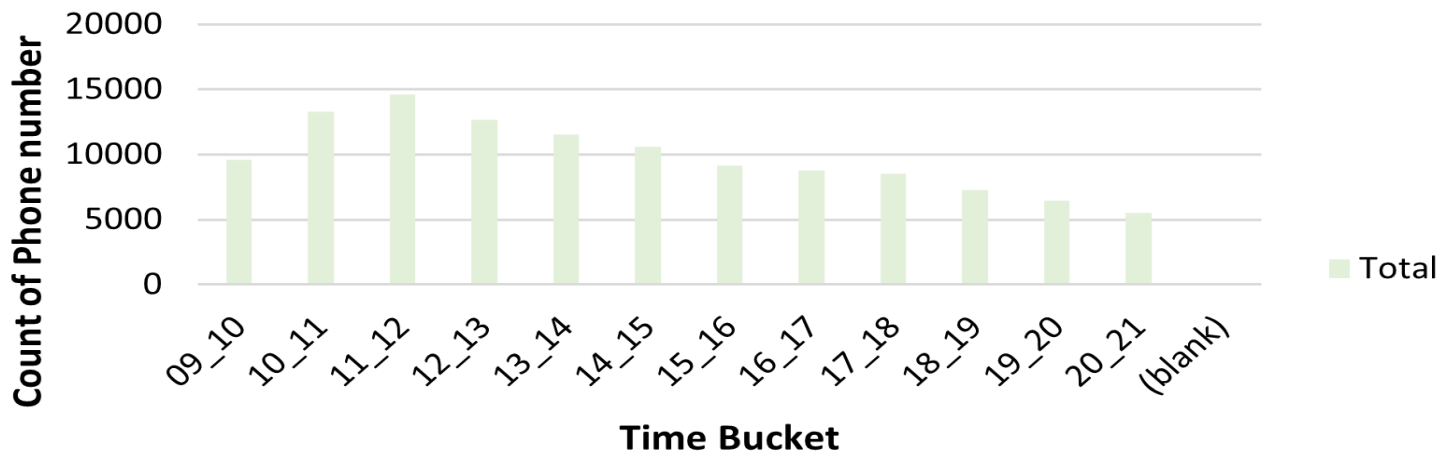
We can calculate the number of calls in each time bucket by using a pivot table by taking the Time\_Bucket as rows and the count of Call\_Seconds as values

Row Labels	Count of Customer_Phone_No
09_10	9588
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
(blank)	
<b>Grand Total</b>	<b>117988</b>

# GRAPH

Count of Customer\_Phone\_No

Total



Time\_Bucket ▾

# Problem C

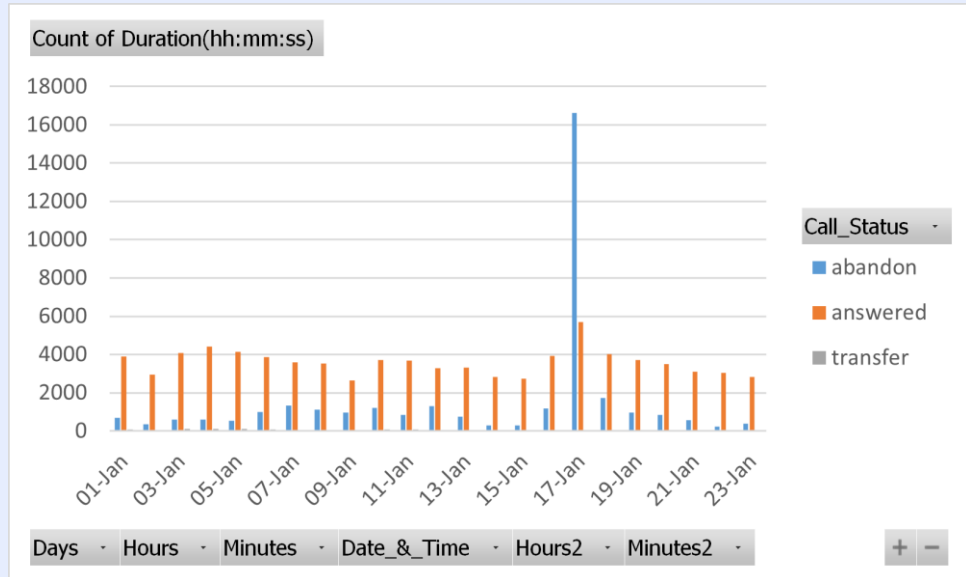
**As you can see abandon rate is approximately 30%. Propose a manpower plan required during each time bucket [between 9am to 9pm] to reduce the abandon rate to 10%. (i.e. you have to calculate min. number of agents required in each time bucket so that at least 90 calls should be answered out of 100.)**

- Agent working hours – 9 hours
- Time taken for lunch and snacks – 1.5 hours
- Agent actual working hours – 7.5 hours
- Duration for which is on call with customers – 60% of total working hours – 4.5 hours

# Calculation of Percentage of Category of Call\_Status

From the below pivot table, we find that approximately 29% of the calls were abandoned, 70% of calls were answered and 1% of calls were transferred.

Count of	
Call_Status	Customer_Phone_No
abandon	29.16%
answered	69.88%
transfer	0.96%
Grand	
Total	100.00%



- By analysing the data, we find that the sum of hours needed to attend the calls for a single day 199.31 hours.
- If one agent works 4.5 hours per day, then the total number of agents required to complete 199.31 hrs (1 day) of work =  $199.31 / 4.5 = 44.292$
- Total number of agents required to complete approximately 70% of work per day – 44.292
- Total number of agents required to complete approximately 90% of work per day =  $90 * 44.292 / 70 = 56.946 \sim 57$  agents.
- Minimum number of agents required for each time bucket – 57 number of calls in each time bucket

# Problem D

**Let's say customers also call this ABC insurance company at night but didn't get the answer as there are no agents to answer, this creates a bad customer experience for this Insurance company. Suppose for every 100 calls that the customer made from 9 am to 9 pm, the customer also made 30 calls in the night between interval [9 pm to 9 am] and the 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

Now propose a manpower plan required during each time bucket in a day.

The maximum Abandon rate assumption would be the same - 10%



Row Labels	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
<b>Average</b>	<b>1496</b>	<b>3585</b>	<b>49</b>	<b>5130</b>

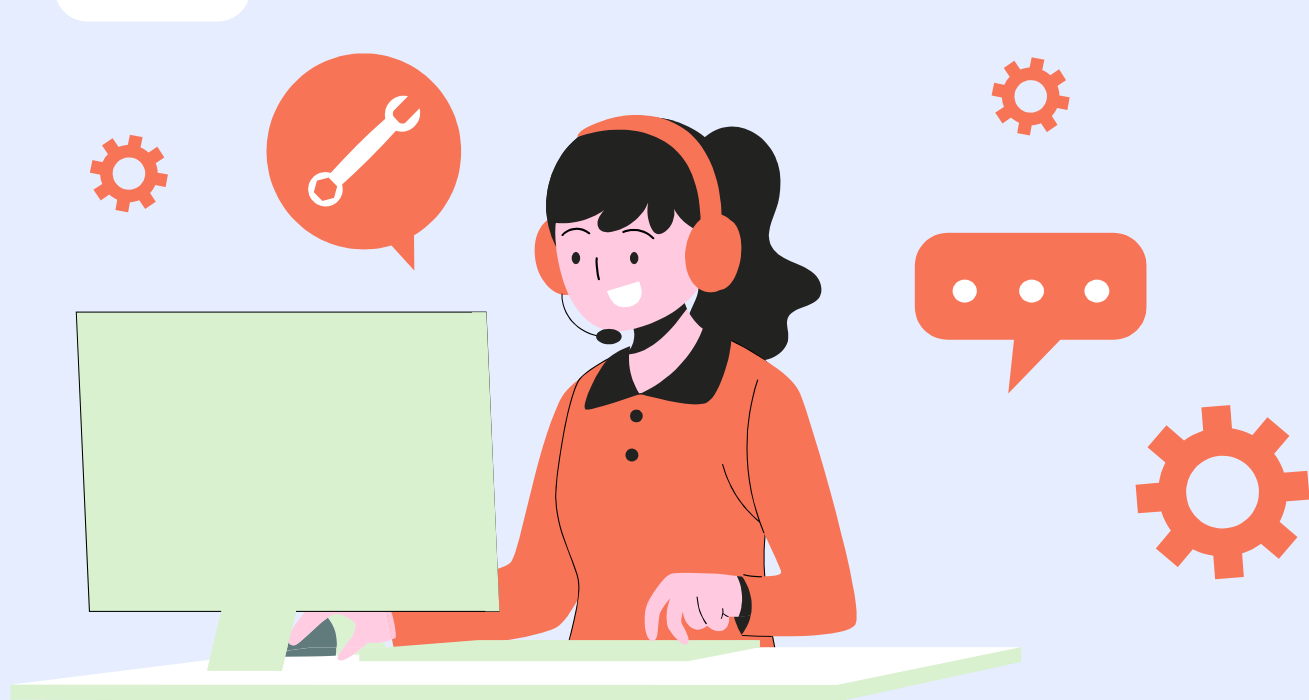
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- From the above table, we find that the daily average calls(9 am – 9pm) = 5130
  - Since 30% of the calls are made at night, the calls at night =  $5130 \times 0.3 = 1539$
  - Additional hours required at night with 10% abandon rate =  $(1539 \times 198.6 \times 0.9) / 3600 = 76.41$  hours
  - Additional agents required =  $76.41 / 4.5 = 17$
  - Therefore, the minimum agents required in each time bucket at night between the interval 9pm to 9am is given in table below
- 



- From the analysis we can infer that the company needs to hire employees to work a night shift and it needs a minimum of 19 employees.
- If the employees find it difficult to constantly work night shifts, then the employees can schedule a rotational shift.
- The managers must schedule the employees' break time so that in each time bucket the min. agents required are required are available to attend the call. In this way, we would be able to reduce the abandonment rate due to the unavailability of staff.

Nights Call (9 pm - 9 am)	Calls Distribution	Time Distribution	Agents Required
21_22	3	10%	2
22_23	3	10%	2
23_24	2	7%	1
00_01	2	7%	1
01_02	1	3%	1
2_3	1	3%	1
3_4	1	3%	1
4_5	1	3%	1
5_6	3	10%	2
6_7	4	13%	2
7_8	4	13%	2
8_9	5	17%	3
Total	30	100%	17

04

# RESULTS





**By working on this project, I learned how a staffing plan in a company might affect productivity and customer satisfaction. As a data analyst, this has helped me to get some domain knowledge about the customer service team and helped me in deriving useful insights from the analysis which is the main role of a Data Analyst.**