ABC Call Volume Trend Analysis

Project Overview:

In this project, you'll be diving into the world of Customer Experience (CX) analytics, specifically focusing on the inbound calling team of a company. You'll be provided with a dataset that spans 23 days and includes various details such as the agent's name and ID, the queue time (how long a customer had to wait before connecting with an agent), the time of the call, the duration of the call, and the call status (whether it was abandoned, answered, or transferred).

A Customer Experience (CX) team plays a crucial role in a company. They analyze customer feedback and data, derive insights from it, and share these insights with the rest of the organization. This team is responsible for a wide range of tasks, including managing customer experience programs, handling internal communications, mapping customer journeys, and managing customer data, among others.

Inbound customer support, which is the focus of this project, involves handling incoming calls from existing or prospective customers. The goal is to attract, engage, and delight customers, turning them into loyal advocates for the business.

Approach:

We are going to clean the data first, we are going to remove duplicates and null values, and then we will perform analysis in excel.

Tech Stack Used:

Ms Excel: I have used MS Excel for the data cleaning and data visualization and also person analysis.

MS Word: I have used this tool to prepare the document to present to the Stockholders.

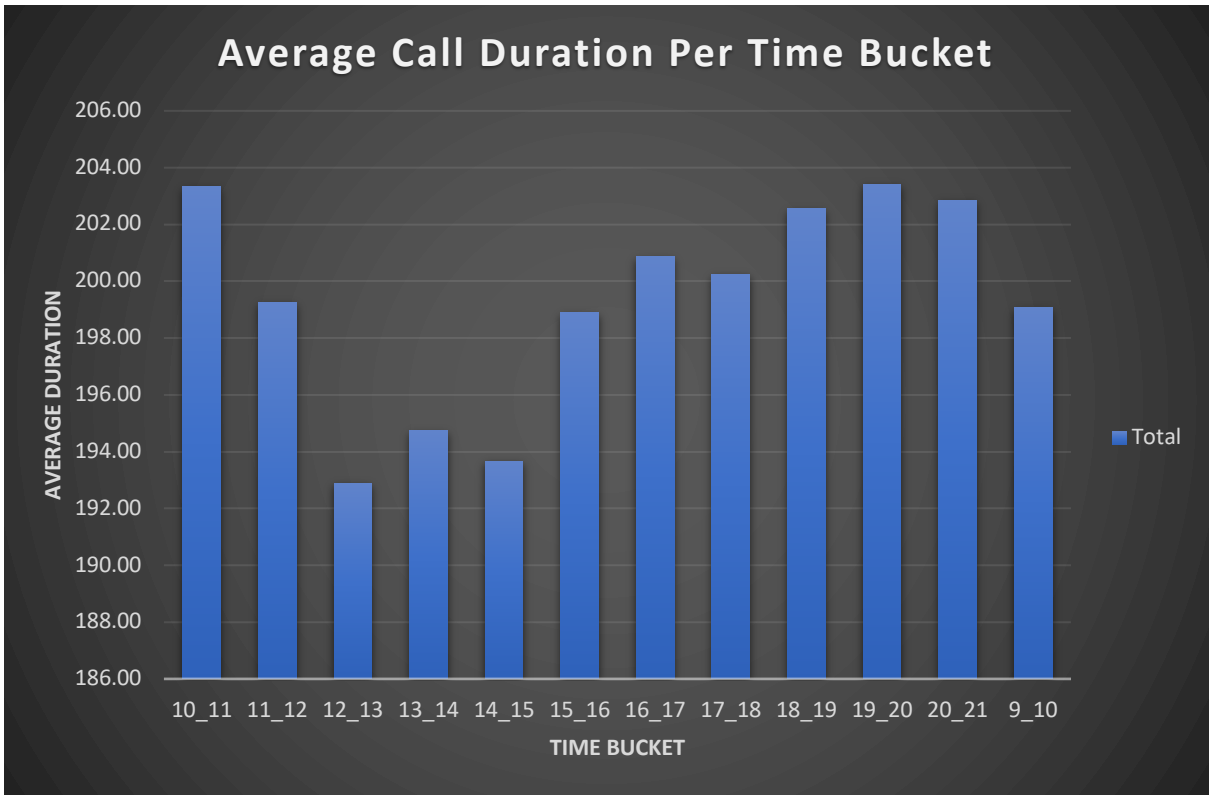
Data Analytics Tasks:

- **Average Call Duration:** Determine the average duration of all incoming calls received by agents. This should be calculated for each time bucket.

Ans: To answer the above Question we need time bucket, duration and call status column to create the pivot table that show the average call duration per time buckets.

Time Bucket	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**



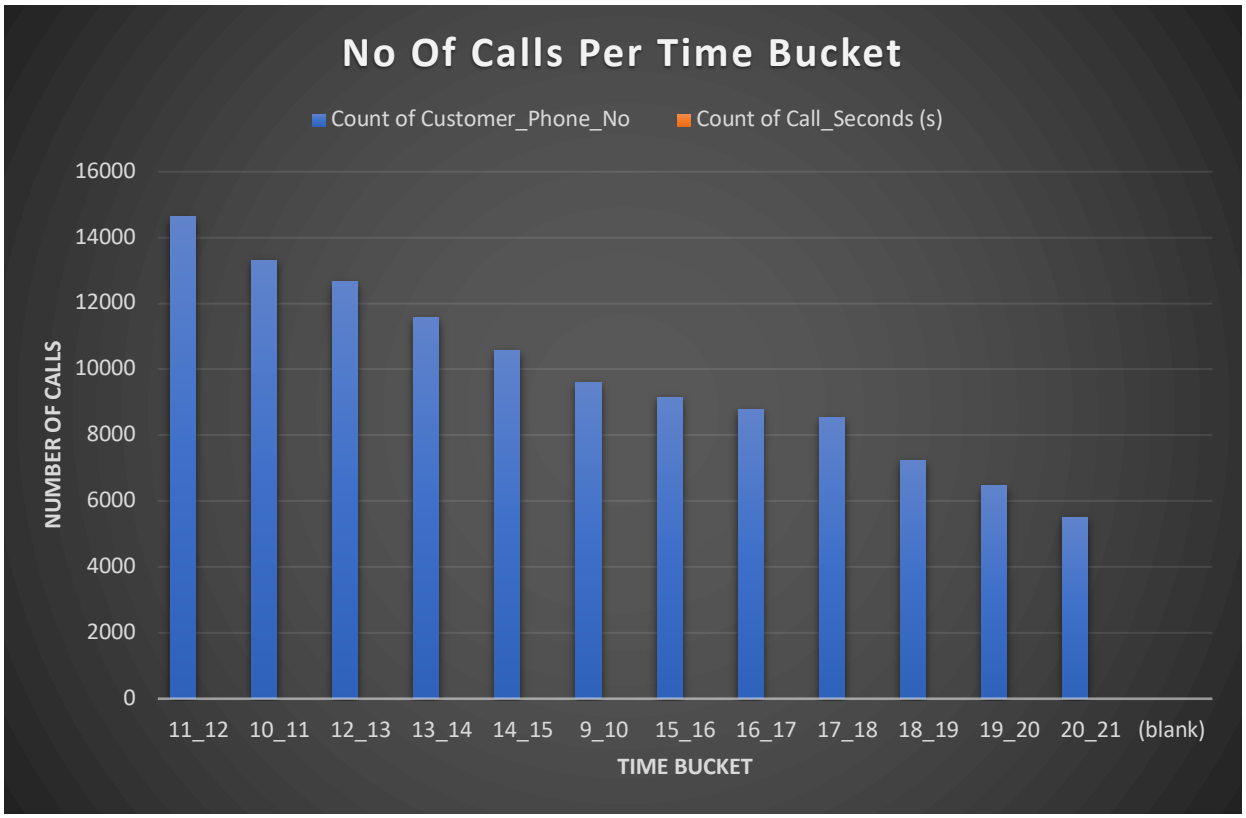
From the chart we can see that most of the call were received during the time bucket of 10-11, 19-20, 20-21, 18-19 and so on and the least call were received during 12-13 time bucket.

- **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.).

Ans: We will take time bucket, call duration and customer phone number column in the another sheet and we will create the pivot table.

We will also calculate the percentage of call volume.

Time Bucket	Count of Customer_Phone_No	Count of Call_Seconds (s)
11_12	14626	12.40%
10_11	13313	11.28%
12_13	12652	10.72%
13_14	11561	9.80%
14_15	10561	8.95%
9_10	9588	8.13%
15_16	9159	7.76%
16_17	8788	7.45%
17_18	8534	7.23%
18_19	7238	6.13%
19_20	6463	5.48%
20_21	5505	4.67%
(blank)		0.00%
Grand Total	**117988**	**100.00%**



So from the above table we can see that maximum number of call have been received during 11-12 time bucket and least number of call received during 20-21 time bucket.

- **Manpower Planning:** The current rate of abandoned calls is approximately 30%. Propose a plan for manpower allocation during each time bucket (from 9 am to 9 pm) to reduce the abandon rate to 10%. In other words, you need to calculate the

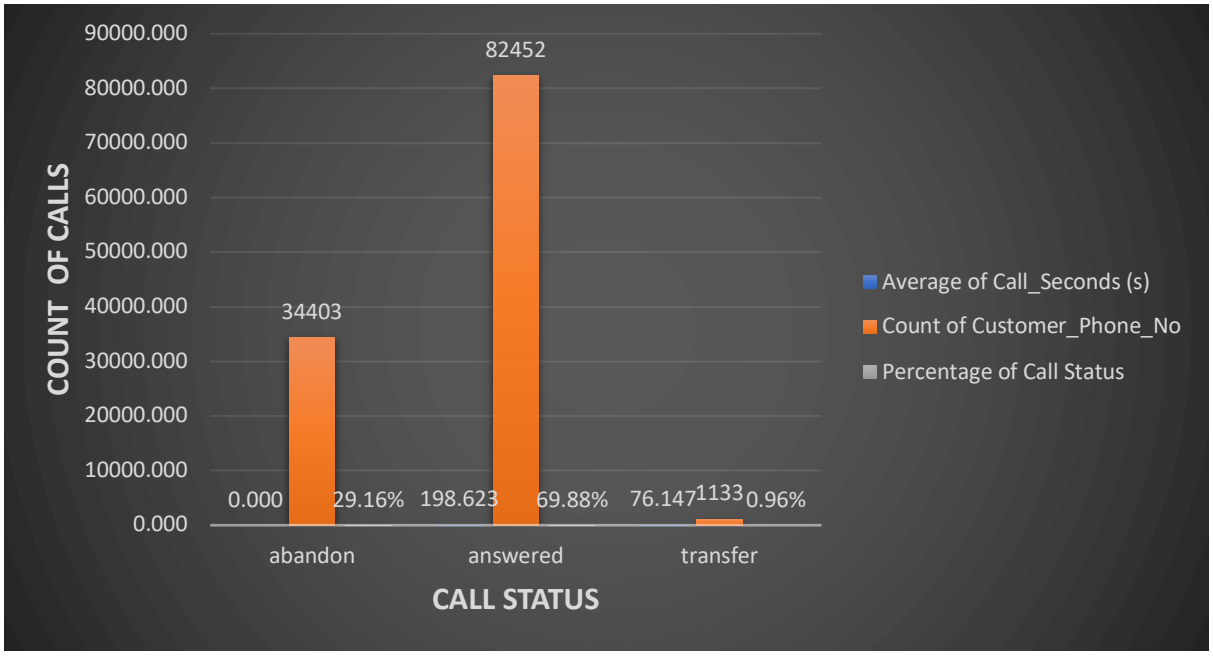
minimum number of agents required in each time bucket to ensure that at least 90 out of 100 calls are answered.

Ans: For this task we have Few assumption to carry.

Assumptions: An agent works for 6 days a week; On average, each agent takes 4 unplanned leaves per month; An agent's total working hours are 9 hours, out of which 1.5 hours are spent on lunch and snacks in the office. On average, an agent spends 60% of their total actual working hours (i.e., 60% of 7.5 hours) on calls with customers/users. The total number of days in a month is 30.

Assumptions	
Total Working Hr by Company	9 Hrs
Break	1.5 hrs
IT downtime	0.5 hrs
Meeting	1 hrs
Actual Working hr by Agent	4.5 hrs

Row Labels	**Average of Call_Seconds (s)**	**Count of Customer_Phone_No**	**Percentage of Call Status**
abandon	0.000	34403	29.16%
answered	198.623	82452	69.88%
transfer	76.147	1133	0.96%
Grand Total	**139.532**	**117988**	**100.00%**



We can see that 69.88% call are answered by the agent whereas 29.16% calls are abandoned.

In order to make answered rate to 90% and on an average an agent works 60% of the time. So by calculating the count of calls on a day and required agents will be.

Count of Duration(hh:mm:ss)	Column Labels			
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
Grand Total	34403	82452	1133	117988
Average	1496	3585	49	5130
Percentage	29%	70%	1%	

This shows the duration of calls during each bucket of Jan 2022.
We can see that 30 percentage of calls are abandoned and only 70% are answered so in order to make it 90% answered and each agent works 90% of the time then we can calculate the following.

Working Hrs per agent	4.5
Average call Duration	198.62

Total number of working hrs for 90%	254.7258322
Total number of agents needed	57

Row Labels	Count of Call_Seconds (s)	Count of Call_Seconds (s)2	Agent required
10_11	11.28%	0.11	6
11_12	12.40%	0.12	7
12_13	10.72%	0.11	6
13_14	9.80%	0.10	6
14_15	8.95%	0.09	5
15_16	7.76%	0.08	4
16_17	7.45%	0.07	4
17_18	7.23%	0.07	4
18_19	6.13%	0.06	3
19_20	5.48%	0.05	3
20_21	4.67%	0.05	3
9_10	8.13%	0.08	5
Grand Total	**100.00%**	**100%**	56

Hence we require 57 agents per day to handle the call to make the answered call to 90%.

- **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%.

Ans: So we assume that at night we get 30% of call as compared to day. So we will prepare a time bucket table that shows the number of calls received each time bucket.

9PM-9AM	Call Distribution	Time Distibution	Agent Required
9_10	3	10.00	2
10_11	3	10.00	2
11_12	2	15.00	1
12_1	2	15.00	1

1_2	1	30.00	1
2_3	1	30.00	1
3_4	1	30.00	1
4_5	1	30.00	1
5_6	3	10.00	2
6_7	4	7.50	2
7_8	4	7.50	2
8_9	5	6.00	3
Total	30	1	17

Count of Call_Status	**Column Labels**				
Row Labels	**abandon**	**answered**	**transfer**	**(blank)**	**Grand Total**
<01/01/22					
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
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23-Jan	381	2832	12		3225
Grand Total	**34403**	**82452**	**1133**		**117988**
					5129.91304

Average call Daily	5130
For night 9PM-9AM	1539

1539 number of call we get because its 30% of the day calls.

Addition Hr Required	76
Additional Agent required	17

So we need additional 17 agent at night to make call rate to 90%.

Time Bucket	Agent Required	Effieciency
9AM-9PM	57	90%
9PM-9AM	17	90%
Total Agent Required	74	

So we need additional 74 agents in a day to make call answered rate to 90%

Hence we can see that in order to get 90% call rate with agent working 90% then we need 76 additional hrs so we need 17 additional agents.

Drive Link:
https://drive.google.com/drive/folders/12QbkQrCA4ZJnPPSqqNZPmy9XzPtPb_eG?usp=sharing

Video Presentation: https://drive.google.com/drive/folders/16LkfOEgURT1NnpsxK9vAcNIA-0WS8DAs?usp=sharing

**********THE END**********