

## PROJECT- 8

### ABC Call Volume Trend Analysis

#### Project Description:

**Overview** - This project will go into the field of Customer Experience (CX) analytics, with a particular emphasis on a company's inbound calling staff.

The customer service representative, sometimes referred to as a call center agent, is one of the most important members of a CX team. These agents deal with a variety of support requests, such as email, incoming, outgoing, and social media help.

The project's main objective is inbound customer assistance, which entails taking inbound calls from current or potential clients. Attracting, involving, and delighting customers is the goal of making them devoted supporters of the company.

**Objective:** The client was given access to a 23-day dataset that contained a variety of information, including the name and ID of the agent, the length of the call, the time it lasted, and the status of the call (as in, abandoned, answered, or transferred).

By examining the data, drawing conclusions from it, and disseminating the conclusions to the CX team (call volume). Predictive analysis, customer journey mapping, corporate communications, customer experience program management, and customer data management will all benefit from these insights.

The customer experience team can turn auditions into customers and make better judgments with the aid of these insights.

#### Approach:

##### Data collection and cleaning:

- I started by loading the given dataset into Microsoft Excel so that I could analyze it. After that, I managed to comprehend the data and deal with any abnormalities by cleaning it up so that it might be analyzed more effectively.
- In this dataset, 117988 rows with 13 columns are displayed. There are blank cells in the column "Wrapped\_By" (47877). This indicates that a blank cell appears for each dropped call.
- #N/A is present in both of the "Agent\_Name, Agent\_Id" columns. It is a result of missed and ignored calls. so that, because of a shortage of agents, none of them responded to them.

##### Data analysis and insight generation:

- I used Microsoft Excel to do the analytical duties listed in the project specifics, such as calculating the average call duration, displaying call volume analysis, and suggesting manpower planning techniques.
- Through thorough research, I was able to derive significant insights from the data, pinpointing patterns, trends, and opportunities for enhancement in the CX team's operational procedures.

##### Presentation:

- I submitted a thorough report in Microsoft Word and, in accordance with the specifications, converted it to PDF. additionally, I recorded a video on loom that explains this project.

## Tech-Stack Used:

Microsoft® Excel® 2021 MSO (Version 2404 Build 16.0.17531.20152) 64-bit

Excel's built-in functions, pivot tables, and charting capabilities made exploring and interpreting the dataset easier. Therefore, I used Excel as my primary data manipulation, analysis, and visualization tool.

Microsoft Word was used to write a detailed report on this project. No other additional libraries or packages were used in the project.

## Insights:

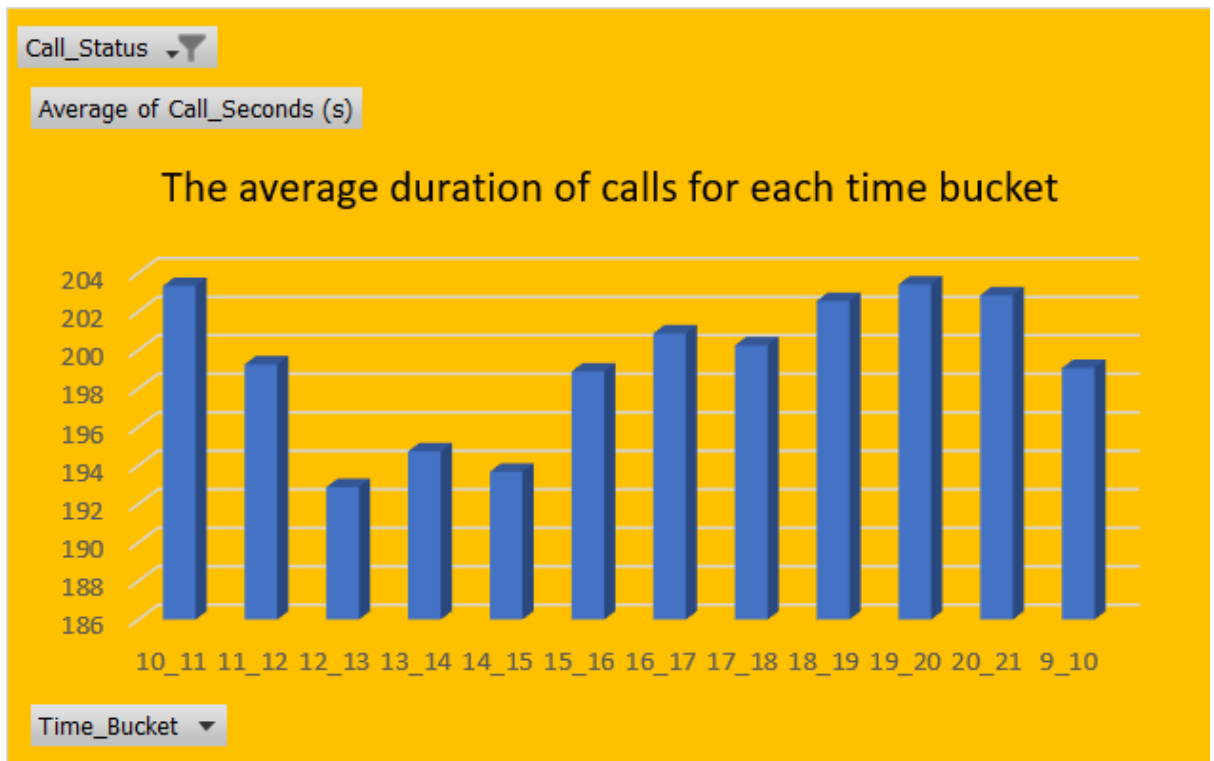
**Data Analytics Tasks:** The dataset contains information about the inbound calls received by a company named ABC, which operates in the insurance sector. By using this data, I have answered the following questions.

1. **Average Call Duration:** What is the average duration of calls for each time bucket?

**Result:**

Time- Bucket ▾	Average of Call_Seconds (s)
10_11	203.3310302
11_12	199.2550234
12_13	192.8887829
13_14	194.7401744
14_15	193.6770755
15_16	198.8889175
16_17	200.8681864
17_18	200.2487831
18_19	202.5509677
19_20	203.4060725
20_21	202.845993
9_10	199.0691057
<b>Grand Total</b>	<b>198.6227745</b>

The following graph shows the average of calls for each time bucket in seconds.



#### Insights:

- The data indicates that the call durations between the time buckets fluctuate significantly. The time interval spanning from 10–11 to 19–20 has the longest average call duration.
- whereas the average call duration that is the shortest is between 12–13-time buckets. The mean amount of time that agents spend on incoming calls is 199. (198.622).
- These findings suggest that different call length patterns correspond to different times of the day. The reason for the greater average duration could be attributed to various factors such as a shortage of agents, more complex conversations, and increased client interaction during the call.

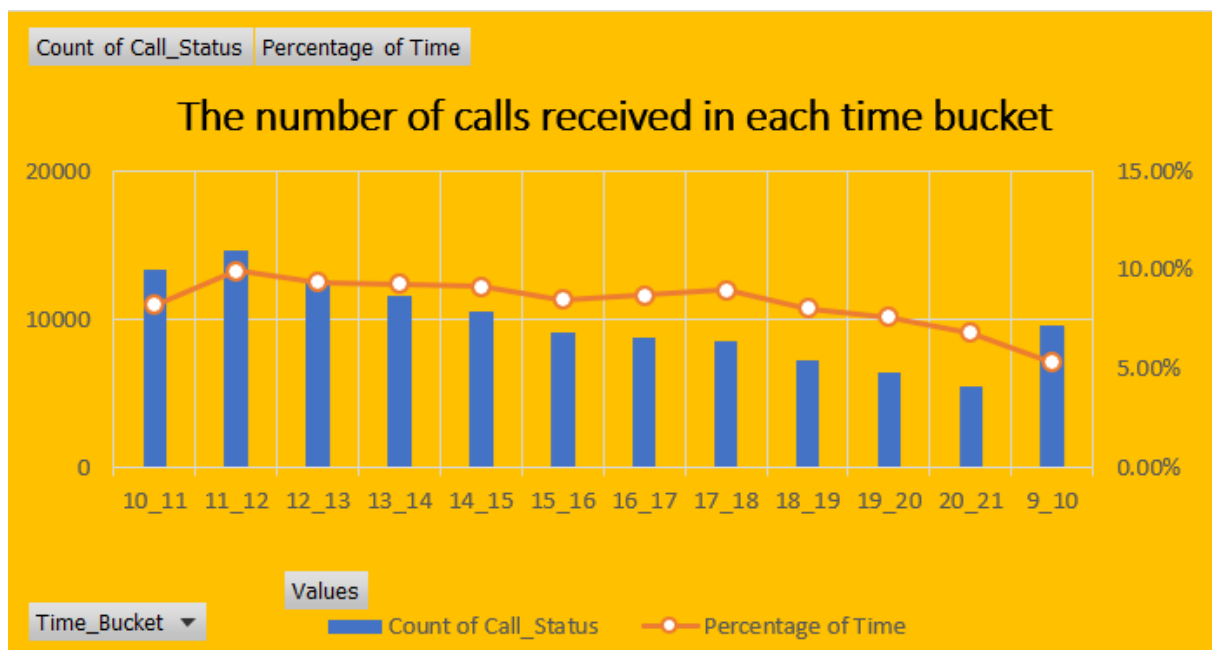
2. **Call Volume Analysis:** Can you create a chart or graph that shows the number of calls received in each time bucket?

#### Result:

the following pivot table shows the number of calls received in each time bucket.

Time_Bucket ▾	Count of Call_Status	Percentage of Time
10_11	13313	8.23%
11_12	14626	9.95%
12_13	12652	9.39%
13_14	11561	9.30%
14_15	10561	9.15%
15_16	9159	8.50%
16_17	8788	8.70%
17_18	8534	8.97%
18_19	7238	8.06%
19_20	6463	7.60%
20_21	5505	6.82%
9_10	9588	5.34%
<b>Grand Total</b>	<b>117988</b>	<b>100.00%</b>

the following combo chart shows the number of calls received in each time bucket.



### Insights:

- The study displays fluctuations in call volume over different time intervals. In particular, the data indicates that calls are made most frequently between time buckets 11\_12 (with 14626 calls), while they are made least frequently between time buckets 20\_21 (with 5505 calls).
- These findings demonstrate how important it is to understand the temporal trends in call traffic to deploy resources and ensure effective customer support.

- By assigning agents to peak call hours, firms can increase both customer satisfaction and operational efficiency.

### 3. Manpower Planning: What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

**Result:**

**Assumptions:**

An agent's total working hours - 9hr	
break -1.5hr	
actual working hours - 7.5hr	
occupancy - 60%	
total working hours - 4.5hr	
total working seconds - 16200sec	
call capacity of any agent/day -	81.6
call capacity of any agent/hour	18

Average no.of call_status	1496	3585	49	5130
call_status in %	29%	70%	1%	100%
here we need to decrease abandon calls from <b>29% to 10%</b> and answered calls from <b>70% to 90%</b> .				
working hours per agent/second	16200			
working hours per agent/day	4.5			
Average of call duration in sec	198.62			
hours needed for 90%	255	→ to increase answered calls from 70% to 90%, it needed 255 hr.		
The no.of agents needed is	57	9am-9pm		
call capacity of any agent/day	82			
call capacity of any agent/hour	18			

Time_bucket	abundant/DAY	Answered/DAY	Transfer/DAY	Grandtotal/DAY	Abandon %	no.of calls	No.of extra calls to answer	Required Agents
10_11	300	277	1	579	52%	521	244	14
11_12	262	372	2	636	41%	572	200	11
12_13	134	410	6	550	24%	495	85	5
13_14	114	384	5	503	23%	452	69	4
14_15	108	347	5	459	23%	413	67	4
15_16	53	337	8	398	13%	358	21	1
16_17	32	341	8	382	9%	344	2	0
17_18	34	330	7	371	9%	334	3	0
18_19	41	270	5	315	13%	283	14	1
19_20	80	199	2	281	29%	253	54	3
20_21	114	125	0	239	48%	215	91	5
9_10	224	193	0	417	54%	375	183	10
Grand Total	1496	3585	49	5130	29%	4617	1032	57

The total no.of calls required to be answered to decrease the abundant percentage from 29% to 10% is 4617. and the total no.of agents required are 57.

**Insights:**

- After calculating the total number of hours required to manage incoming calls across all time buckets, which comes out to be 255 hours, I found that about 57 agents are needed to guarantee coverage

and maintain a service level where at least 90 out of 100 calls are answered.

- Effective workforce planning and resource allocation are made possible by this study to meet call volume expectations and ensure customer satisfaction.
- There are 57 minimum number of agents required in each time bucket to reduce the abandon rate from 30% to 10%.

**4. Night Shift Manpower Planning:** Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%.

An agent's total working hours - 9hr  
 break -1.5hr  
 actual working hours - 7.5hr  
 occupancy - 60%  
 total working hours - 4.5hr  
 total working seconds - 16200sec  
 no.of calls at night between 9pm to 9am - 30

Average no.of call_status	1496	3585	49	5130
call_status in %	29%	70%	1%	100%
Here we need to decrease abandoned calls from <b>29% to 10%.</b>				
Agent working hours -	4.5			
Average of call duration in sec-	198.62			
Average no.of calls at night -	1539			
To get 90% call rate at night -	76			
Total no.of agents needed in night shift -	17	9pm-9am		

The total no.of agents required between two slots are :

9am-9pm	57	90%
9pm-9am	17	90%
Total agents needed for two slots	74	

**Insights:**

- Upon examining the provided assumptions and approximating the mean number of calls made during the night shift as 1539, I discovered that around 17 agents are needed to achieve a 90% call rate.
- This enables efficient staff scheduling, ensures sufficient coverage to meet call volume requirements, and maintains service quality during nighttime hours.

## Result:

- Through this investigation, I have gained a great deal of knowledge regarding call volume patterns, call length factors, and key performance indicator (KPI) monitoring.
- Comprehending the daily fluctuations in call numbers will facilitate more efficient resource management while responding to client inquiries.
- By using more straightforward techniques and demonstrating my flexibility with analytical procedures, I enhance my planning skills. I've learned a lot from this study that will help to maximize call center productivity and deliver excellent customer service.

**Recommendations:** I can suggest ABC Insurance Company based on my extensive investigation of this project:

- Determine the most effective means of making expectations clear to every contact center representative.
- Assign more agents during peak hours and fewer during off-peak hours to lower the percentage of abundant calls.
- Give call center representatives more weight on attitude than aptitude. That implies that tolerance, empathy, great communication skills, and enthusiasm are all necessary for working in a call center.
- Lastly, giving both new and experienced agents thorough training is necessary. The abundance call percentage can be decreased with frequent check-ins and retraining sessions. Customer happiness and business improvement are inevitable outcomes of these actions.

## Excel workbook link:

[Call Volume Trend Analysis Project 9.xlsx](#)

## Video presentation:

<https://www.tella.tv/video/shivaramas-video-dysm>