# ABC Call Volume Trend Analysis

## (Final Project-4)


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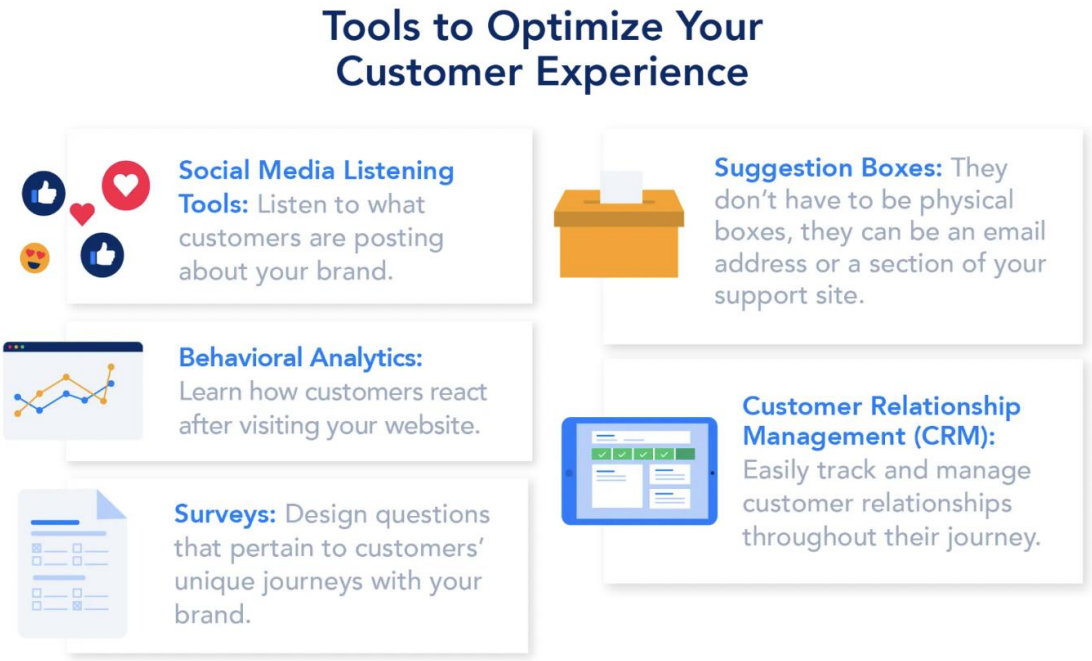



## Project Description:

The attached dataset is of Inbound calls of an ABC company from the insurance category consists of a Customer Experience (CX) Inbound calling team for 23 days. Data includes Agent_Name, Agent_ID, Queue_Time [duration for which customer have to wait before they get connected to an agent], Time [time at which call was made by customer in a day], Time_Bucket [for easiness we have also provided you with the time bucket], Duration [duration for which a customer and executives are on call, Call_Seconds [for simplicity we have also converted those time into seconds], call status (Abandon, answered, transferred).

A customer experience (CX) team consists of professionals who analyze customer feedback and data, and share insights with the rest of the organization. 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.

Interactive Voice Response (IVR), Robotic Process Automation (RPA), Predictive Analytics, Intelligent Routing are some of the most impactful AI-empowered customer experience tools we can use in this project.

In a Customer Experience team there is a huge employment opportunities for Customer service representatives A.k.a. call centre agents, customer service agents. Some of the roles for them include: Email support, Inbound support, Outbound support, social media support.

Inbound customer support is defined as the call centre which is responsible for handling inbound calls of customers. Inbound calls are the incoming voice calls of the existing customers or prospective customers for our business which are attended by customer care representatives. Inbound customer service is the methodology of attracting, engaging, and delighting our customers to turn them into our business' loyal advocates. By solving our customers' problems and helping them achieve success using our product or service, we can delight our customers and turn them into a growth engine for our business.

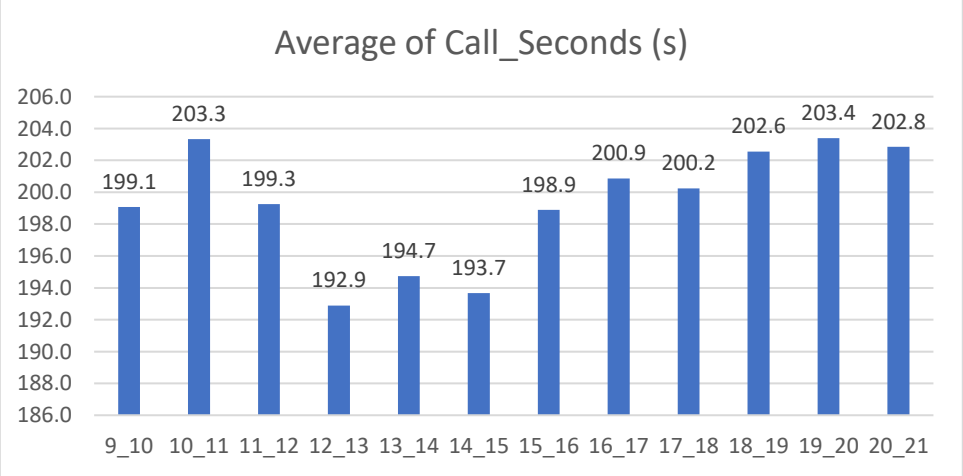
## Tech-Stack Used:

- **Microsoft Excel 365:** It enables users to format, organize and calculate data in a spreadsheet. It organize data in an easy-to-navigate way. We need not to perform any complex mathematical functions. And it turn piles of data into helpful graphics and charts.

- **Microsoft Word 2021:** It is used to make a report (PDF) to be presented to the leadership team.

## Approach:

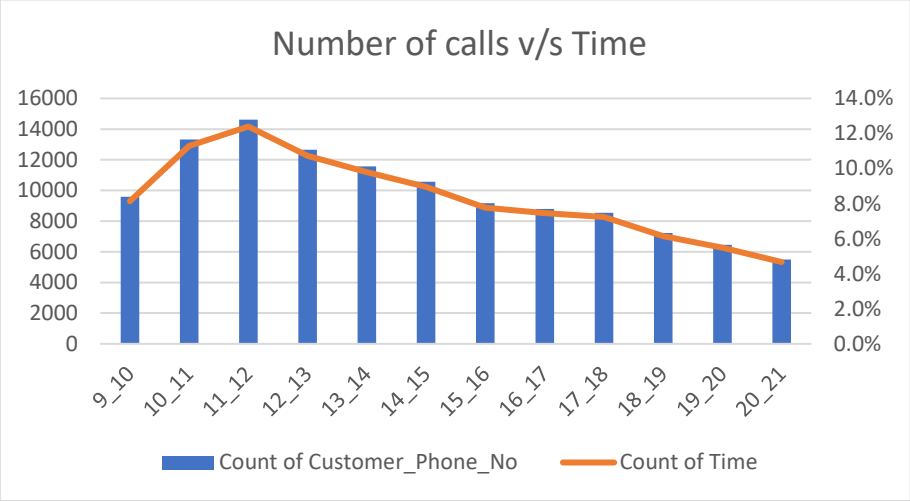
- **Calculate the average call time duration for all incoming calls received by agents (in each Time_Bucket).**




➢ Pivot Table is used to answer this question.

- Time_Bucket is measured in the Rows and average of Call_Seconds is measured in the Values section. And we put Call_Status in the Filters section.
- The total average of call time duration which are answered by the agents is 198.6 seconds.
- The average call time duration for all incoming calls received by agents is the highest in between 10 am to 11 am and from 7 pm to 8 pm
- The average call time duration for all incoming calls received by agents is the least in between 12 noon to 1 pm.

- **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 plotted Time_Bucket in the rows and took Count of Customer_Phone_No and Count of Time in the Values section.
- We measured Count of Time as the percentage of Column Total.
- The customers call the most in between 11 am to 12 noon.
- The customers call the least in between 8 pm to 9 pm.

- **Assumption:** An agent work for 6 days a week; On an average total unplanned leaves per agent is 4 days a month; An agent total working hrs is 9 Hrs out of which 1.5 Hrs goes into lunch and snacks in the office. On average an agent occupied for 60% of his total actual working Hrs (i.e. 60% of 7.5 Hrs) on call with customers/ users. Total days in a month is 30 days.

| | |
|---|---|
| Agents working hour | 9 |
| Agents on-floor work hour | 7.5 |
| Working Days | 6 |
| Out of 28 days, an agent works | 24 |
| Unplanned leave days | 4 |
| Work days per month | 20 |
| Days an agent work in a week | 5 |
| Actual working hours | 60% |
| Total time spent on call | 4.5 |

- ***Note**: For easy calculation, we assumed there are 28 days in a month.*

- **As we 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. We have to calculate minimum number of agents required in each time bucket so that at least 90 calls should be answered out of 100.)**

| | | | | |
|---|---|---|---|---|
| Time taken on an average to answer a call | **198.6 seconds** | Time Bucket | Count of Time | Reqd. Agents |
| | | 9_10 | 8.1% | 5 |
| Time requirement to answer 90% of the calls (hrs | **254.7001826** | 10_11 | 11.3% | 6 |
| | | 11_12 | 12.4% | 7 |
| Total working person required per day | **57** | 12_13 | 10.7% | 6 |
| | | 13_14 | 9.8% | 6 |
| | | 14_15 | 9.0% | 5 |
| Call volume daily (9 AM - 9pm) | 5130 | 15_16 | 7.8% | 4 |
| If we provide support in night, (9 PM - 9 AM) | 1539 | 16_17 | 7.4% | 4 |
| | | 17_18 | 7.2% | 4 |
| Additional hours required | 76.41135 | 18_19 | 6.1% | 3 |
| | | 19_20 | 5.5% | 3 |
| Additional HC | 17 | 20_21 | 4.7% | 3 |
| | | Grand Total | 100.0% | 57 |
| Total HC | 74 | | | |

- First, we created pivot table. Date & Time is dragged down to Rows, Call Status to Columns, while taking count Call Duration in the Values section.
- Then, we calculated the average of abandon, answered and transfer by using the average excel formula.
- 29% of the calls are abandoned, 1% is transferred, while 70% of the calls are answered in the day time.
- Total agents required to answer the 90% of the calls per day is 57.
- The minimum number of agents required for each time bucket is calculated by 57 * count of time (calculated in the 2nd question).

- **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 |

**Now propose a manpower plan required during each time bucket in a day. Maximum Abandon rate assumption would be same 10%.**

- We first calculated the Time Distribution by dividing each calls distribution by total calls i.e. 30.
- The number of agents required for each time bucket is calculated by 17 * Time Distribution.

- **Note:** 17 is calculated above by dividing the additional hours required to answer the night calls by 4.5 (actual working hours of agents).

| 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 |
| | 30 | | 17 |

# Insights:

- The customers call the least in the evening. So, the company can reduce the number of agents at that time for answering the calls.
- The company can hire 17 customer support agents for the night shift work.
- The company can shift some of the day workers for the night shift.
- The employees who are working 9 am to 9 pm. The manager can change some of the workers shift from 5 am to 2 pm and some workers from 2 pm to 11 pm to get the most calls answered.
- The company can make the employers divide into 3 parts too, so that the agents are always available 24/7.
- We found there were few outliers in the data. And if we have removed that outliers, then the answers would have been different.

# Results:

- I learned how an analyst can make an impact in customer service department.
- I learned how a company deals with the customers to give them the most satisfaction.
- I got to know about the IVR Duration, which is an AI tool, who answer the calls to get to know the customer exact question and then transfer it to the right agent to get the customer's queries get answered.
- This project was easy to get the answers as the data provided by the team have already calculated the time bucket and converted the calls duration into seconds, so we do not had to spend time on it to calculate.
- I learned about the behavioural analytics.

## Excel Sheet Link: ABC Call Volume Trend Analysis