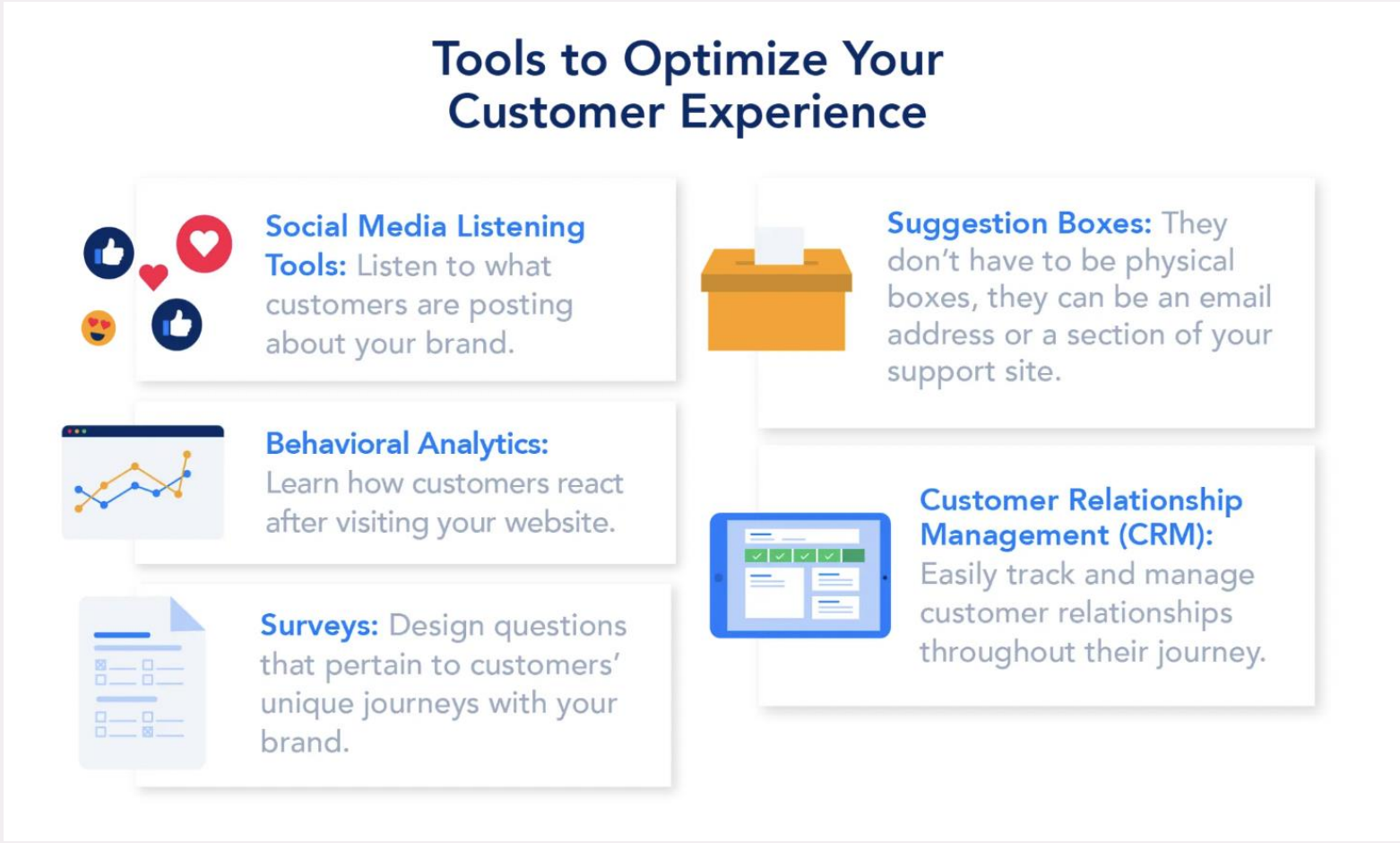
ABC Call Volume Trend Analysis



Submitted by
Rahul Inchal

ABC Call Volume Trend Analysis

- **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.

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- In a Customer Experience team there is a huge employment opportunities for Customer service representatives A.k.a. call center 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 center 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.

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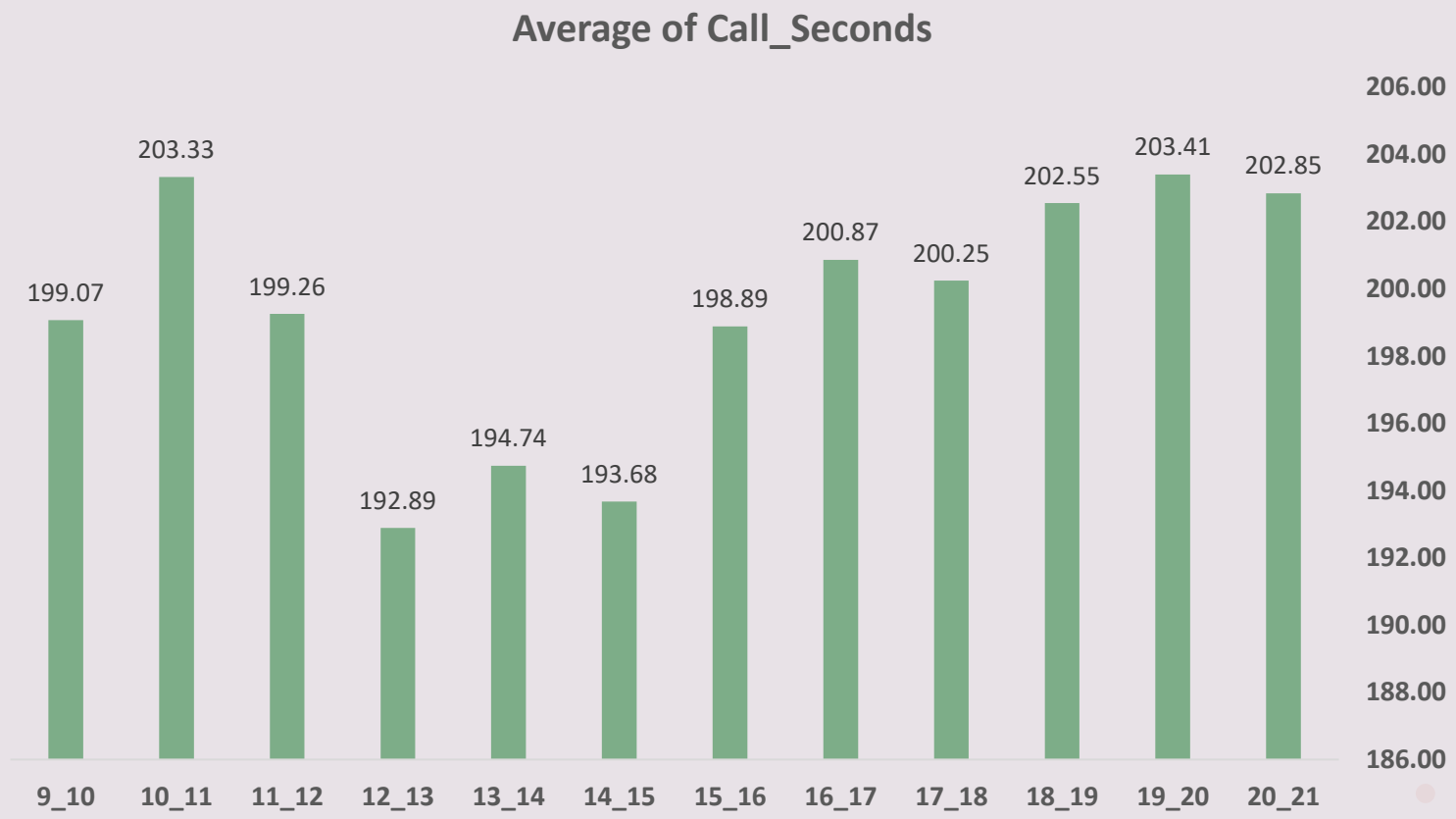
A. Calculate the average call time duration for all incoming calls received by agents (in each Time_Bucket).

Time Bucket	Average of Call_Seconds (s)
9_10	199.1
10_11	203.3
11_12	199.3
12_13	192.9
13_14	194.7
14_15	193.7
15_16	198.9
16_17	200.9
17_18	200.2
18_19	202.6
19_20	203.4
20_21	202.8
Grand Total	198.6



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ABC Call Volume Trend Analysis

Insights:

1. 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.
2. The total average of call time duration which are answered by the agents is 198.6 seconds.
3. 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
4. The average call time duration for all incoming calls received by agents is the least in between 12 noon to 1 pm.

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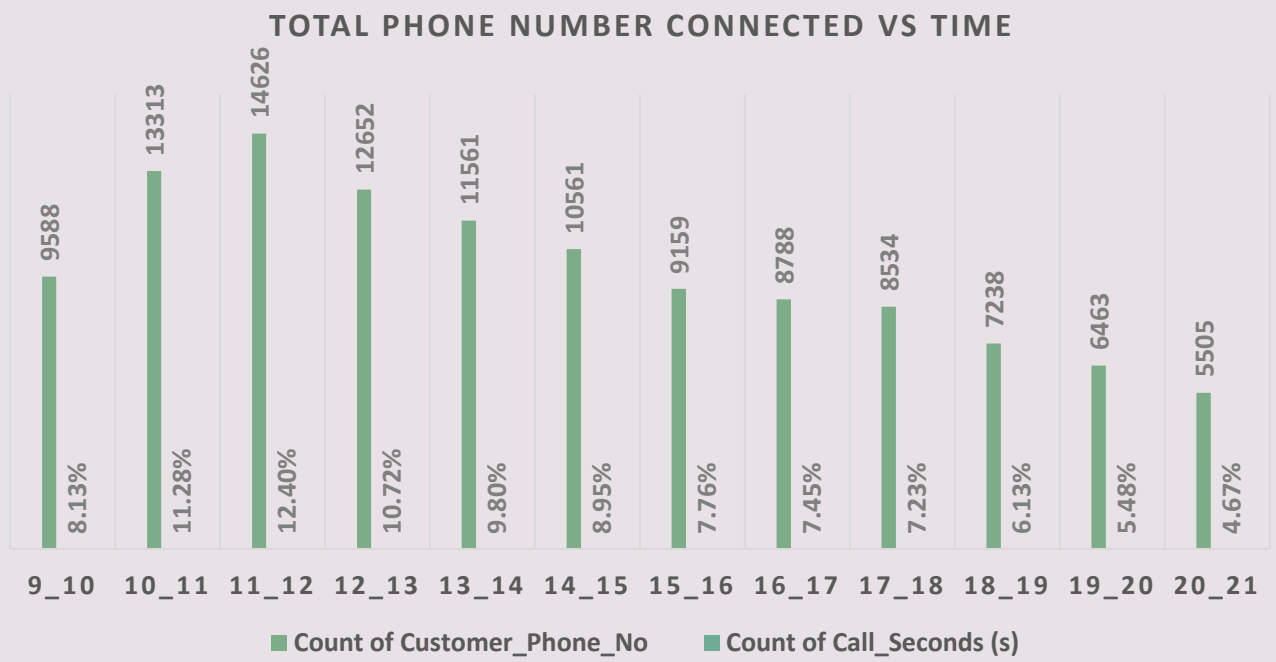
- **B. Show the total volume/ number of calls coming in via charts/ graphs [Number of calls v/s Time]. You can select time in a bucket form (i.e., 1-2, 2-3, …..)**

Row Labels	Count of Customer_Phone_No	Count of Call_Seconds (s)
9_10	9588	8.13%
10_11	13313	11.28%
11_12	14626	12.40%
12_13	12652	10.72%
13_14	11561	9.80%
14_15	10561	8.95%
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%
Grand Total	117988	100.00%



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Insights:

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

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C. 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 must calculate minimum number of agents required in each time bucket so that at least 90 calls should be answered out of 100.)

Assumption

Total Working Hours by the company	**9 Hrs**
Break	**1.5 Hrs**
IT downtime	**0.5 Hrs**
Meetings	**1 Hrs**
Actual working hour by the agent	**5 Hrs**

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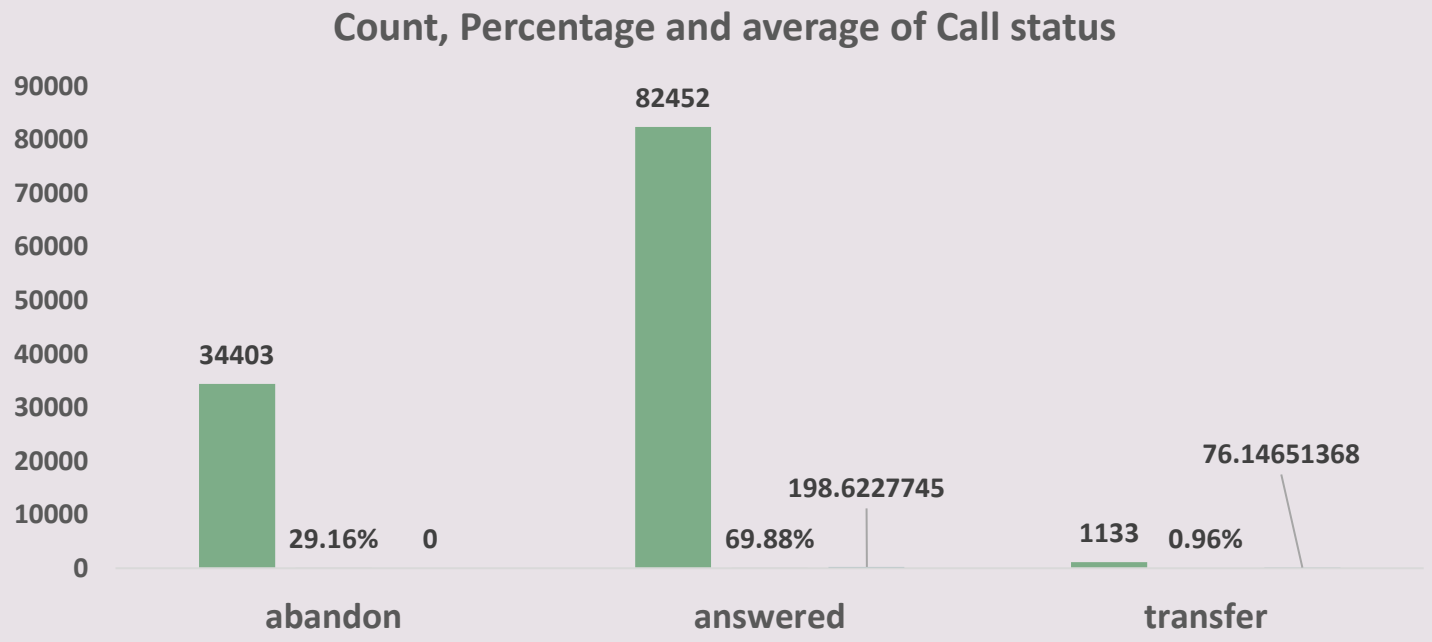
Row Labels	Count of Customer_Phone_No2	Count of Customer_Phone_No	Average of Call_Seconds (s)
abandon	34403	29.16%	0
answered	82452	69.88%	198.62
transfer	1133	0.96%	76.15
Grand Total	117988	100.00%	139.5321473



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Row Labels	Sum of Call_Seconds (s)	Sum of Hour
01-Jan	676664	187.96

time_bucket	count_of_call_sec	count_of_call_sec	man req
9_10	8.13%	0.08	5
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
Total			56

Total agent equals 60%	37.59
Agent required for 90%	56

Insights

- Total agents working can be calculated by average calls on a single day divided by total time spend by one man in a single day.

  total agent = 187.96/5 = 37.59
- If agents are working for 5 hrs a day and 60% calls are getting answered. If we want 90% of the calls to get connected, we apply unitary method to find how many more employee we want.

  total agent = 90*37.59/60 = 56.3 ~ 56 agents

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ABC Call Volume Trend Analysis

1. 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.
2. Then, we calculated the average of abandon, answered and transfer by using the average excel formula.
3. 29% of the calls are abandoned, 1% is transferred, while 70% of the calls are answered in the daytime.
4. Total agents required to answer the 90% of the calls per day is 56.
5. The minimum number of agents required for each time bucket is calculated by 56 * count of time (calculated in the 2nd question).

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D. 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

Total number of agents required is calculated by

Average call daily (9am - 9pm)	**5130**
For night (9pm - 9am)	**1539**
Additional Hours required	**76.41135**
Additional agents	**15**

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Night call (9pm - 9am)	Call Distribution	Time Distribution	Agent 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

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1. We first calculated the Time Distribution by dividing each calls distribution by total calls i.e., 30.
2. The number of agents required for each time bucket is calculated by 15 * Time Distribution
3. 15 is calculated above by dividing the additional hours required to answer the night calls by 5 (actual working hours of agents).
4. Also, while calculating, the round figure is taken into consideration as there cannot be 1.5 men working.

Insights:

1. The customers call the least in the evening. So, the company can reduce the number of agents at that time for answering the calls.
2. The company can hire 15 customer support agents for the night shift work.
3. The company can shift some of the day workers for the night shift.
4. 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.
5. The company can make the employers divide into 3 parts too, so that the agents are always available 24/7.
6. We found there were few outliers in the data. And if we have removed that outliers, then the answers would have been different.

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Results:

1. I learned how an analyst can make an impact in customer service department.
2. I learned how a company deals with the customers to give them the most satisfaction.
3. 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.
4. 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 have to spend time on it to calculate.
5. I learned about the behavioral analytics.

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