

*****ABC Call Volume Trend Analysis*****

Link:- [Click here](#)

<https://docs.google.com/spreadsheets/d/1BGQXk6wSpVgl8TcwOTrC5x88O1gRd1W9/edit#gid=1292548536>

Description:-

A Customer Experience (CX) team is vital to a company. They review customer feedback and data to generate insights, which they then communicate to the rest of the organization. This team oversees a variety of tasks such as managing customer experience programs, internal communications, mapping customer journeys, and handling customer data.

In today's world, numerous AI-driven tools are used to improve customer experience. These tools include Interactive Voice Response (IVR), Robotic Process Automation (RPA), Predictive Analytics, and Intelligent Routing.

A crucial role within the CX team is that of the customer service representative, often referred to as a call centre agent. These agents provide support through various channels including email, inbound and outbound calls, and social media.

Inbound customer support, the focus of this project, involves managing incoming calls from current or potential customers. The objective is to attract, engage, and delight customers, ultimately transforming them into loyal advocates for the company.

Tech Stack Used:-

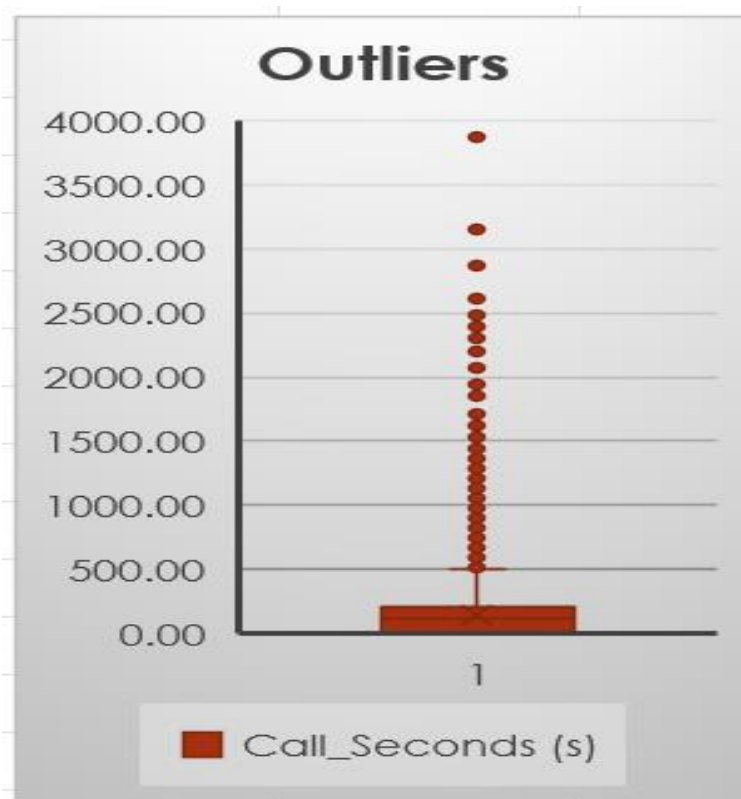
Microsoft Excel 365— A spreadsheet editor software used mainly by professionals to enter data in table format, perform computations, plot graphs and Interpretation.

Exploratory Data Analysis:-

1. It is observed that all the rows where Agent's Name is not mentioned the calls have been abandoned , call duration and wrapped by is also not mentioned. So replacing all the Agent's name from #N/A to Not Mentioned(Abandon).
2. Agent ID is also replaced by Not Mentioned(Abandon)
3. Some values in Wrapped by are missing even when agents have answered the calls. So the Blank cells have been replaced by Agents.

Count of #N/A		Replaced by
In Agents Name	34198	Not Mentioned(Abandon)
In Agents ID	34198	Not Mentioned(Abandon)

4. 8 Outliers found using Box Plot using threshold of 2500 seconds.

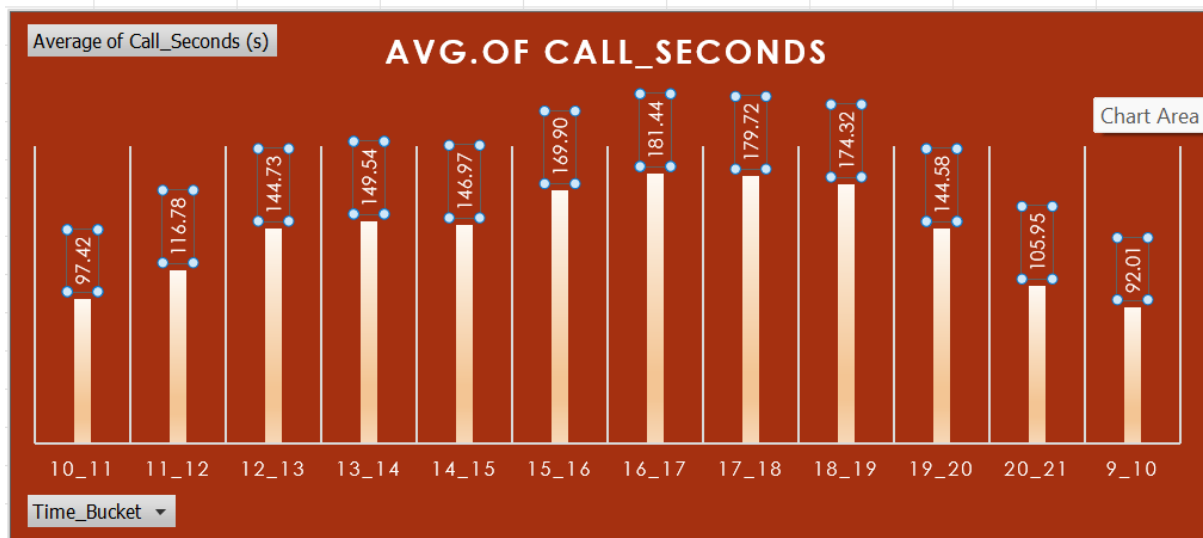


On further investigation, didn't find anything unusual. It just means that in a particular bucket Customers tend to talk more and ask for the I formation. So nothing was changed.

Task 1

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

Your Task: What is the average duration of calls for each time bucket?



Insights:-

The graph above displays the average call duration for all incoming calls received by agents during each time bucket. It indicates that agents tend to have longer conversations during the 17:00-18:00 and 18:00-19:00 time buckets.

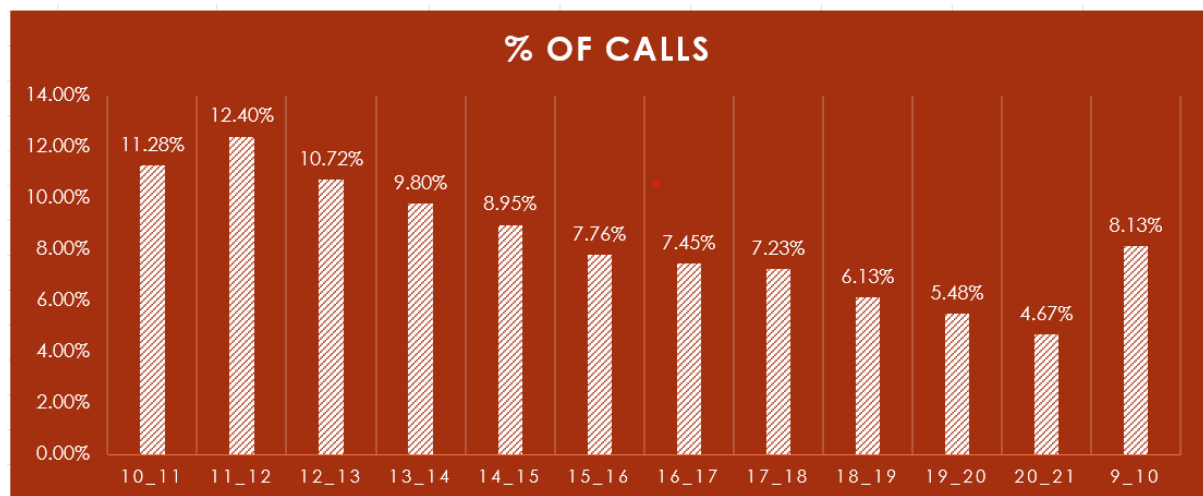
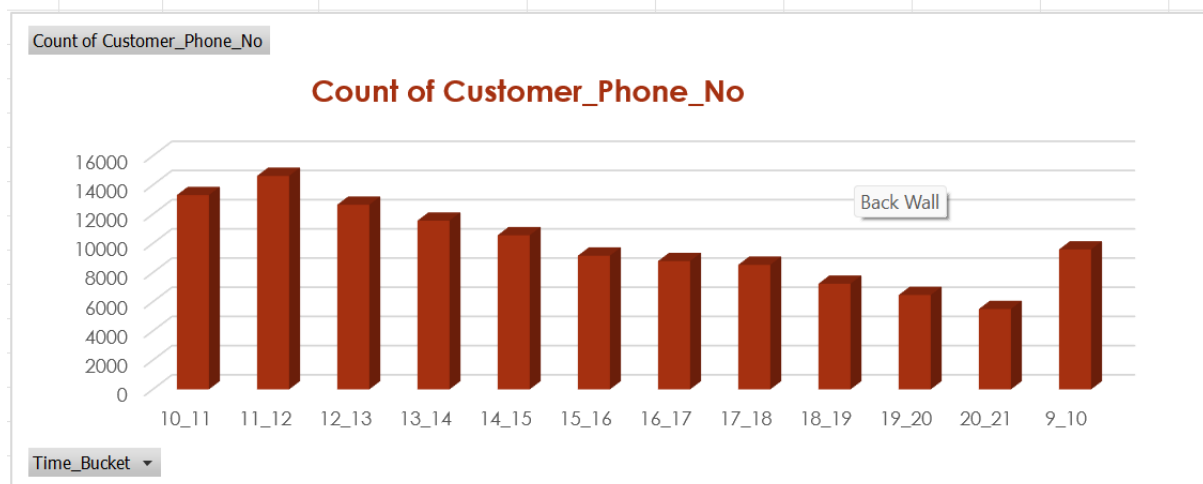
The analysis of the call duration data shows a clear trend where the length of conversations increases significantly during the late afternoon to early evening hours. This can be due to various factors, such as:

1. **Customer Availability:** Customers may have more time to discuss their issues in detail during these hours, as they are likely done with their workday.
2. **Complex Queries:** More complex or detailed queries might be addressed during these hours when both customers and agents can allocate more time to resolve issues comprehensively.
3. **Increased Call Volume:** There could be a higher call volume during these hours, leading to longer average call durations as agents spend more time managing each interaction.

Task 2:-

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.).

Your Task: Can you create a chart or graph that shows the number of calls received in each time bucket?



Insights:-

Analysing call volume data helps identify peak times during the day when call centre activity is highest. In this case, the data reveals that call volume is significantly higher during the late morning hours, specifically between 10:00 AM and 12:00 PM. This insight is valuable for several reasons:

- Staffing Optimization:** Ensure that more agents are available during these peak times to handle the increased call volume efficiently.

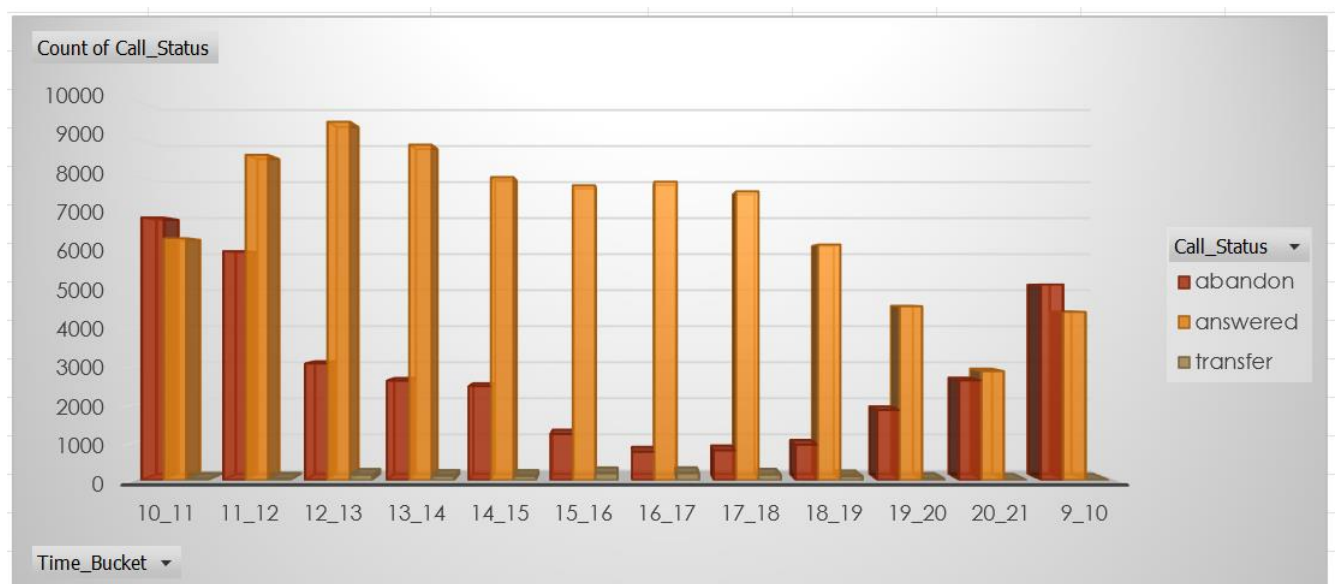
2. **Resource Allocation:** Allocate additional resources and support during these hours to maintain service quality.
3. **Training:** Prepare agents for high call volumes and possible complex queries during these periods to reduce wait times and improve customer satisfaction.

By understanding these traffic patterns, call centres can improve efficiency, reduce wait times, and enhance overall customer experience.

Task 3:-

What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

Using Pivot Table and column chart we found the calls abandoned and answered.



As it is assumed that a month has 30 days, Agents work for 6 days a week and take 4 unplanned holidays. So the Agent is employed for 22 days in a month.

With assumption total days in a month	30
4 weekends	4
4 unplanned leaves	4
Total working days in a month	22

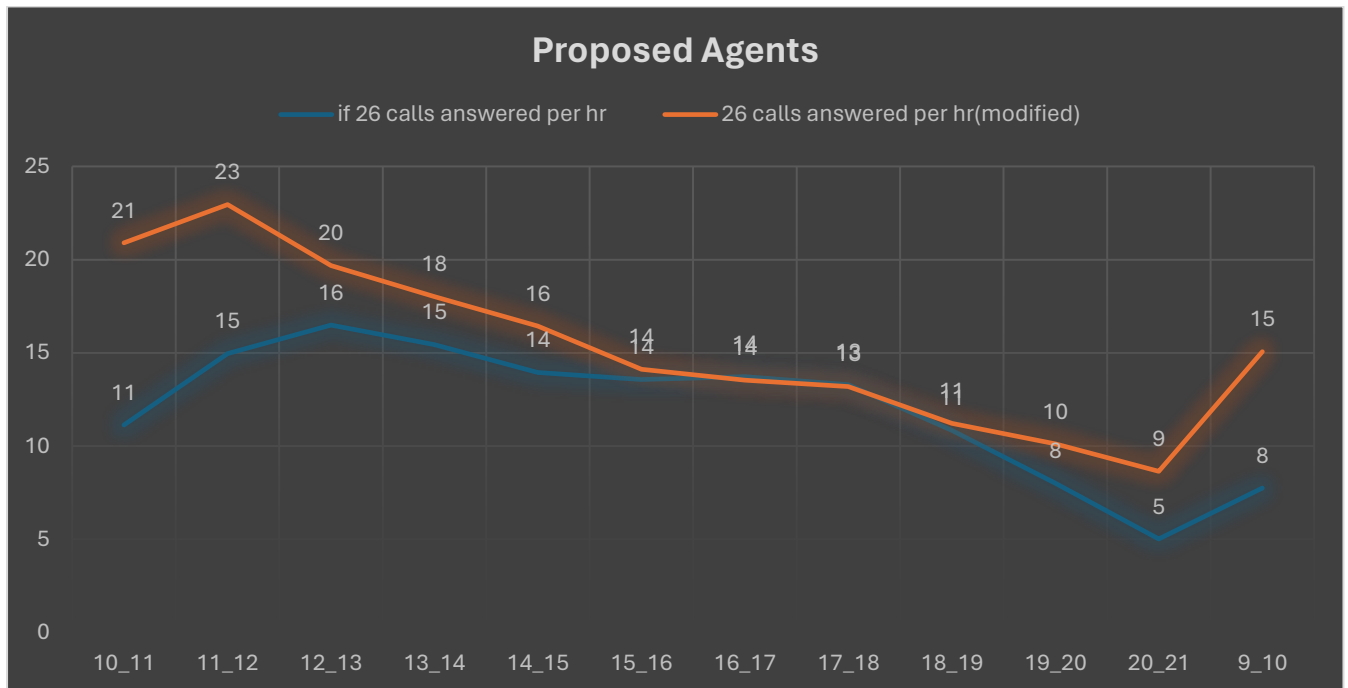
Time-Bucket	abandon calls for 22 days	answered calls for 22 days	abandon calls for one day	answered calls for one day	Per day calls	Percentage of Abandoned calls	90 % calls if answered
10_11	6911	6368	314	289	604	52%	543
11_12	6028	8560	274	389	663	41%	597
12_13	3073	9432	140	429	568	25%	512
13_14	2617	8829	119	401	520	23%	468
14_15	2475	7974	113	362	475	24%	427
15_16	1214	7760	55	353	408	14%	367
16_17	747	7852	34	357	391	9%	352
17_18	783	7601	36	346	381	9%	343
18_19	933	6200	42	282	324	13%	292
19_20	1848	4578	84	208	292	29%	263
20_21	2625	2870	119	130	250	48%	225
9_10	5149	4428	234	201	435	54%	392
Grand Total	34403	82452	1564	3748	5312	29%	4780

Further call made per hour is calculated.

Working hrs per day:	9 hrs
Break taken:	1.5 hrs
Total hrs to be worked	7.5 hrs
60 % of hrs worked	4.5 hrs
Converted into seconds	16200
Avg of Call_seconds	139.53
Call that can be made per day	116
Call that can be made per hr	26

Later the call answered per day was divided by 26 to get Agents working per hour in the company. To optimize the call to 90% ,the proposed 90% answered calls were divided by 26 to get the required number of agents in the company. The data is as follows.

Time-Bucket	answered calls for one day	if 26 calls answered per hr	90 % calls if answered	26 calls answered per hr(modified)
10_11	289	11	543	21
11_12	389	15	597	23
12_13	429	16	512	20
13_14	401	15	468	18
14_15	362	14	427	16
15_16	353	14	367	14
16_17	357	14	352	14
17_18	346	13	343	13
18_19	282	11	292	11
19_20	208	8	263	10
20_21	130	5	225	9
9_10	201	8	392	15
Grand Total	3748	144	4780	184



Insights:-

To ensure the call abandonment rate stays below 10%, the call center needs to adjust agent availability based on call volume patterns.

1. **Morning Hours:** Significantly increase the number of agents. The call volume is high in the morning, and currently, there are not enough agents to handle the influx, leading to higher abandonment rates.

2. **Afternoon Hours:** Increase the number of agents slightly. The call volume decreases compared to the morning, but still requires more agents than currently available to keep the abandonment rate low.
3. **Late Evening Hours:** Again, a slight increase in agents is needed. Although the call volume is lower than in the morning, maintaining adequate agent availability is crucial to ensure the abandonment rate does not exceed 10%.

By strategically aligning agent availability with call volume trends, the call center can effectively manage and reduce the call abandonment rate, enhancing overall customer satisfaction.

Task 4:-

Your Task: Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%

Assuming that for every 100 calls in morning 30 calls are received at night. So calculated 30% of the calls answered.

Time-Bucket	90 % calls if answered
10_11	543
11_12	597
12_13	512
13_14	468
14_15	427
15_16	367
16_17	352
17_18	343
18_19	292
19_20	263
20_21	225
9_10	392
Grand Total	4780
30% of call at night	1434

From the data given Assuming 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 made. And proposed calls with agents are found.

Time_Slot	Distribution of 30 calls	% of Distribution of calls	Distribution of calls	26 calls answered per hr(modified)
9pm-10pm	3	10%	143	6
10pm-11pm	3	10%	143	6
11pm-12am	2	7%	96	4
12am-01am	2	7%	96	4
01am-02am	1	3%	48	2
02am-03am	1	3%	48	2
03am-04am	1	3%	48	2
04am-05am	1	3%	48	2
05-am06am	3	10%	143	6
06am-07am	4	13%	191	7
07am-08am	4	13%	191	7
08am-09am	5	17%	239	9
Total	30	100%	1434	55

Insights:-

To effectively manage call center operations and maintain a low call abandonment rate, it is essential to optimize agent availability based on call volume patterns. The highest demand for agents is observed during the morning hours from 9 A.M to 1 P.M, requiring the most number of agents. Conversely, the lowest demand occurs during the night hours from 12 A.M to 5 A.M, requiring the least number of agents.

Steps to Optimize Scheduling:-

1. **Analyze Historical Data:** Use historical call data to identify peak and off-peak times.
2. **Forecasting:** Implement forecasting models to predict future call volumes and adjust schedules accordingly.
3. **Flexible Scheduling:** Use real-time scheduling software to adjust agent availability dynamically based on unexpected changes in call volume.
4. **Staff Allocation:** Allocate more agents during the morning peak hours (9 A.M to 1 P.M) and fewer agents during the night hours (12 A.M to 5 A.M) to match the call volume demand.

By aligning agent schedules with call volume trends, call centers can enhance operational efficiency and improve customer satisfaction.

Conclusion:-

The ABC Call Volume Trend Analysis project focuses on understanding and enhancing customer experience by analyzing call volume trends and customer feedback. Key components of this project include:

1. **Customer Experience Team:** A dedicated team of professionals who analyze customer feedback and data, sharing valuable insights with the organization to improve customer satisfaction.
2. **Analyzing Customer Relationships:** The project emphasizes the importance of solving customer problems to maintain and enhance the relationship between the business and its customers. This helps in fostering customer loyalty and business growth.
3. **Skill Development:** Working on this project enhances various skills, including data analytical skills, where one learns to interpret and derive insights from data; and visualization skills, which involve creating clear and impactful charts and graphs to represent data trends.

By completing this project, I have gained practical experience in using Excel for data analysis, which is crucial for many business and analytical roles. It also highlights the importance of customer relationship management and its impact on business success.

*****_-----**THANK YOU**-----*****