

ABC Call Volume Trend Analysis

ABHISHEK ADYANI



Agenda

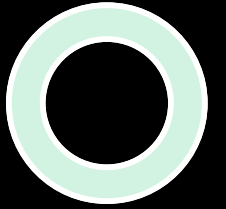
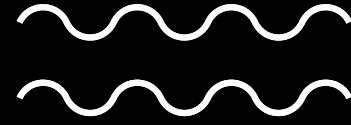
Introduction

Tech-stack used

Insights

Conclusion

Result



Introduction



Project description

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. 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.

What I will be doing

I'll be using my analytical skills to understand the trends in the call volume of the CX team and derive valuable insights from it.

Insights

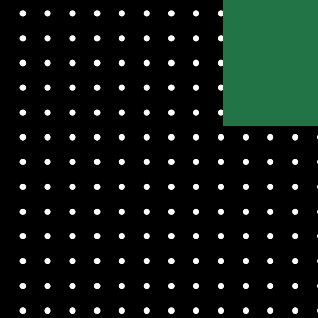
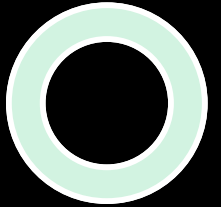
To find solution to various types of problems and understand the data so that the company takes data based decisions



Tech-stack used

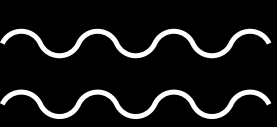
Microsoft excel 2021

I used this software as it has various functions that are convenient and faster to use. It helps in drawing meaningful conclusions and to create visualizing data to understand the problem clearly and to make data driven decisions.

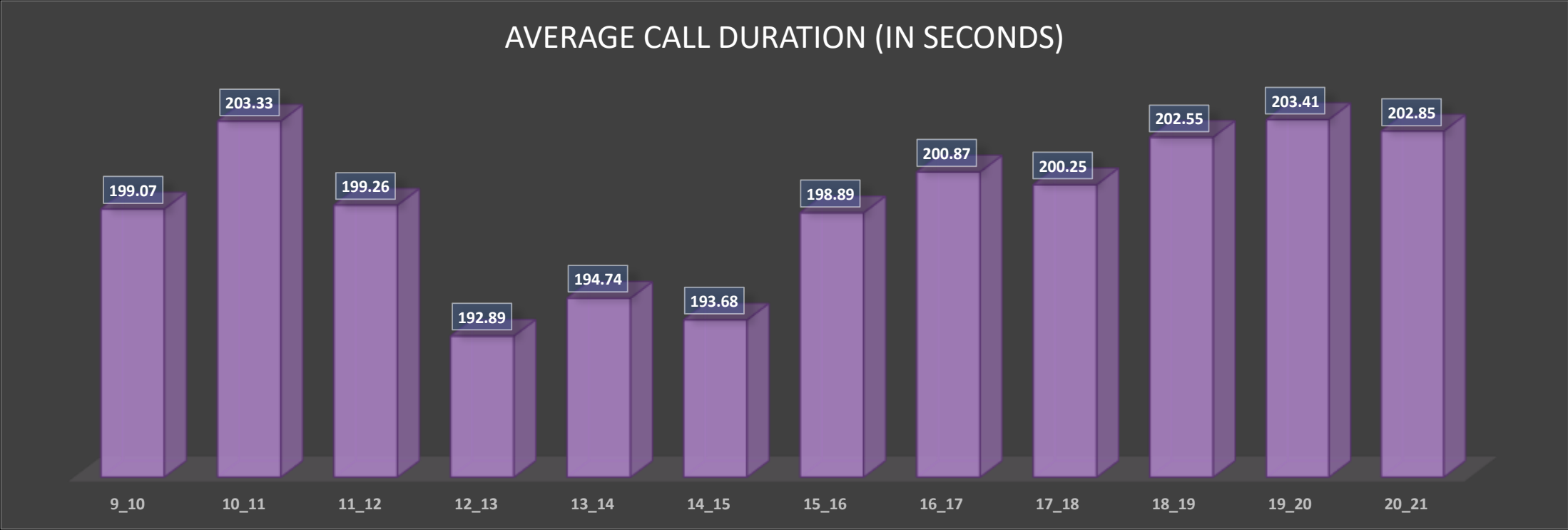


**Insight
s**



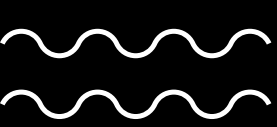


1) Average Call Duration: What is the average duration of calls for each time bucket?



Most of the calls were in the time bucket of 10am-11am and 7pm-8pm, having average call duration of 203.33 & 203.41 respectively

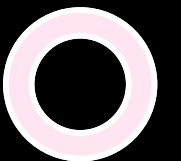


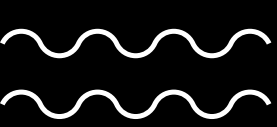


1) Average Call Duration: What is the average duration of calls for each time bucket?

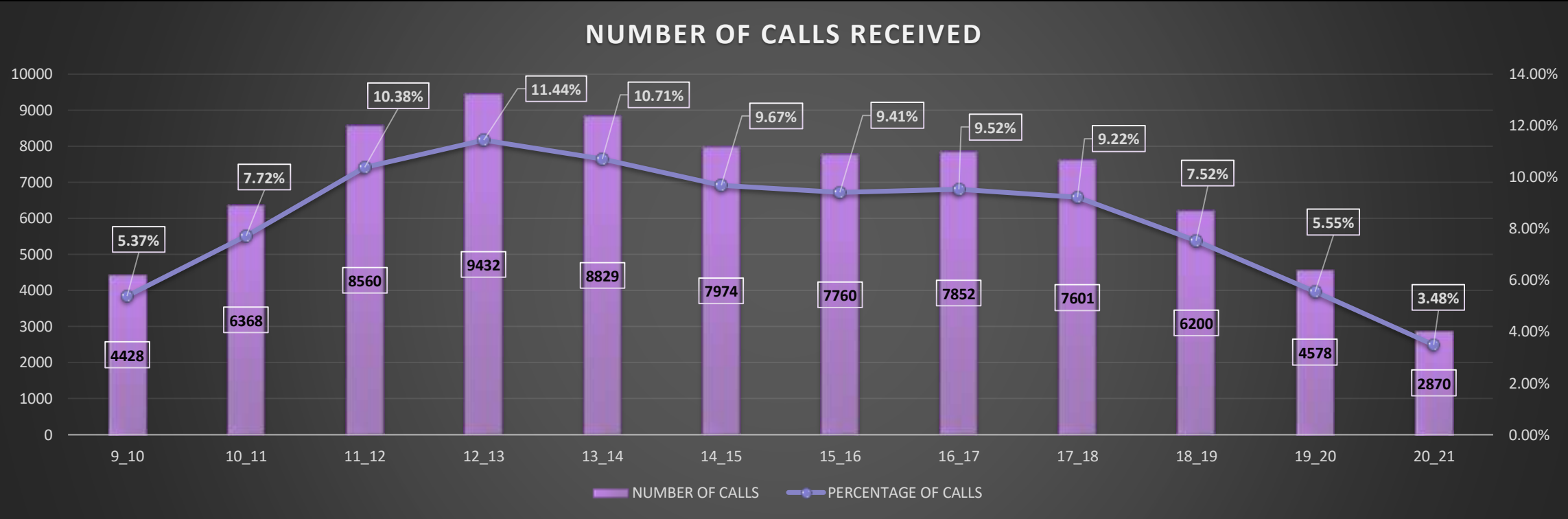
INSIGHTS :

- **By using pivot table for this analysis, I used time bucket, call_seconds and call_status, for finding the average duration of call for answered calls.**
- **Based on the analysis, total average duration of call answered by agents is 198.62.**
- **Further analysis reveals that maximum avg duration of incoming calls is at 10am-11am and 7pm-8pm.**
- **we can also see from 12pm-3pm the duration of call are very less, the minimum avg duration was at 12pm-1pm.**

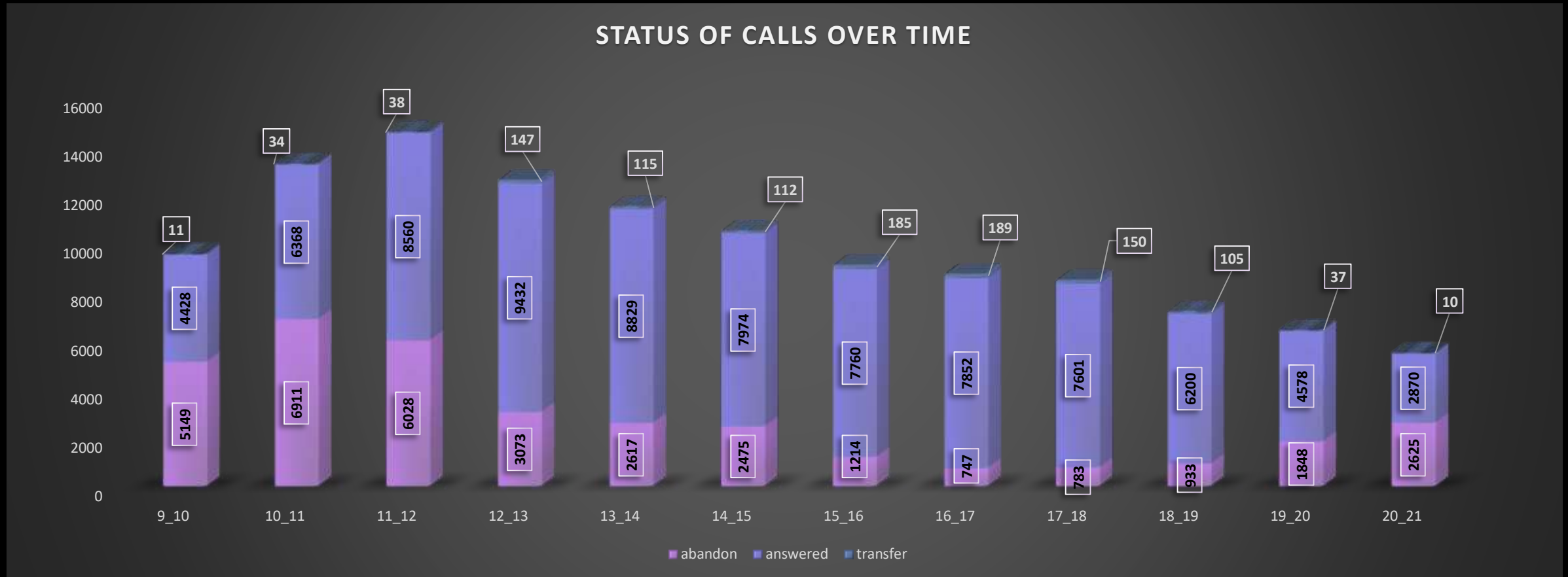


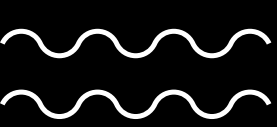


2) Call Volume Analysis: Can you create a chart or graph that shows the number of calls received in each time bucket?



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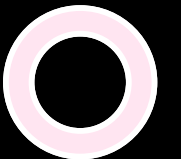




2) Call Volume Analysis: Can you create a chart or graph that shows the number of calls received in each time bucket?

INSIGHTS :

- **By using pivot table, I analyzed the columns, customer_phone_no, time_bucket and call_status, I expressed count of call status as percentage.**
- **From the chart number of call received, we see a downward trend of call received, as the day ends the number of calls decreases.**
- **Maximum calls received is between 12pm-1pm, and the minimum is between 8pm-9pm.**
- **From the chart status of calls over time, I analyzed there were more abandon calls in the morning than the answered calls**
- **The abandon calls were more or less equal to the answered calls at the shift ending time.**
- **Max number of calls abandon were at 10am-11am**

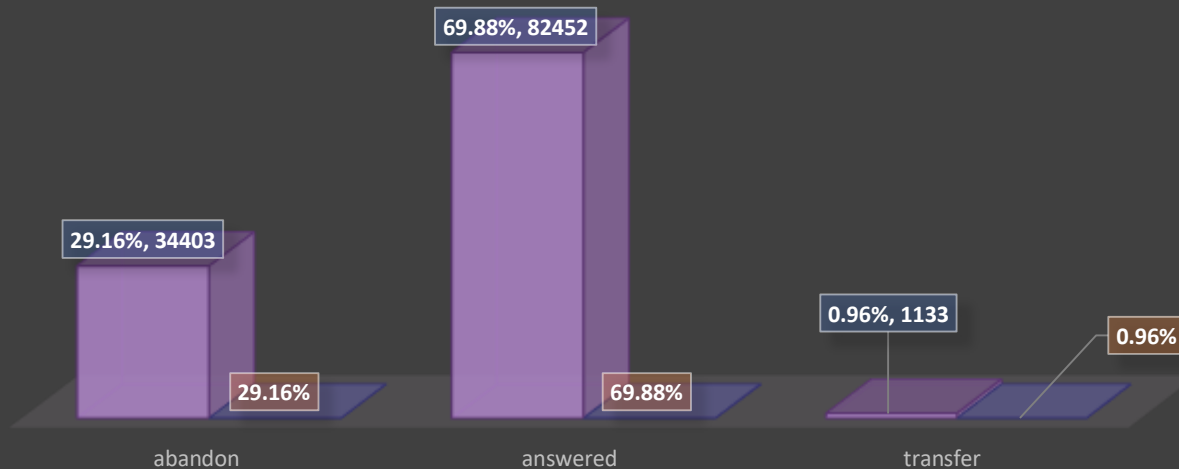


3) Manpower Planning: What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

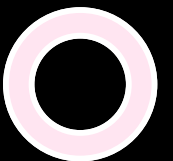
I divided this problem in 4 steps:

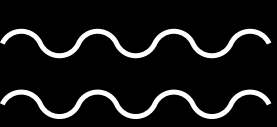
1) STEP 1 : First we have to find the percentage of every call status to find how much is abandon occupying

STATUS OF INCOMING CALLS



CALL STATUS	COUNT OF CALLS	PERCENTAGE OF CALLS
abandon	34403	29.16%
answered	82452	69.88%
transfer	1133	0.96%
Grand Total	117988	100.00%





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

2) STEP 2 : we find the total number of call duration for one day, we have taken 1st jan, we have found this in seconds unit

DATE	TOTAL NO. OF CALL IN SECONDS (s)
01-Jan	676664
Grand Total	676664

3) STEP 3: we will convert total number of call duration from seconds to hours

DATE	TOTAL NO. OF CALL IN SECONDS (s)	TOTAL NO. OF CALL IN HOUR
01-Jan	676664	187.96



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

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.

working hours	9 hours
lunch break	1.5 hours
total working hours	7.5 hours
actual working hours	4.5 hours (60% of 7.5)

total hours worked	187.96
total no. of agents worked (we know that the abandon rate is 30% and we have to reduce it to 10%)	42
using unitary method : 42 agents are working for the answerd rate of 70%	54

STEP 4 : TABLE CREATION OF AGENT ALLOTMENT BY TIME FRAME

TIME BUCKET	Count of Call_Seconds (s)	percentage of Call_Seconds (s)	time distribution	No. of agents required
9_10	9588	8.13%	0.08	4
10_11	13313	11.28%	0.11	6
11_12	14626	12.40%	0.12	7
12_13	12652	10.72%	0.11	6
13_14	11561	9.80%	0.10	5
14_15	10561	8.95%	0.09	5
15_16	9159	7.76%	0.08	4
16_17	8788	7.45%	0.07	4
17_18	8534	7.23%	0.07	4
18_19	7238	6.13%	0.06	3
19_20	6463	5.48%	0.05	3
20_21	5505	4.67%	0.05	3
Grand Total	117988	100.00%	1.00	54





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

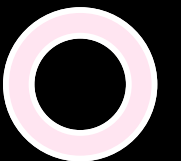
INSIGHTS :


- By using pivot table, I analyzed the column call_status, I used count of columns and I expressed count of call status as percentage
- By analyzing the chart status of incoming calls, I found the percentage of calls that are answered by agents i.e 70% and abandon percentage i.e. 29%
- In the pivot table of date&time I measured sum of call seconds on 1st Jan
- I converted the call seconds to call hours by using the formula:

$$\text{Sum of call hours} = (\text{sum of call seconds}/3600) = 187.96$$

- We have given the actual time an agent works that is 4.5 (60% of 7.5)
- I calculated the total no. of agents worked for 70% of answered calls

$$\text{Total no. of working agents} = (\text{total working hrs}/\text{actual working hrs}) = 42$$





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

INSIGHTS :

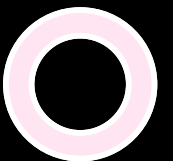
- I used unitary method to calculate the agents required to reduce the abandon rate to 10%:

Total no. of agents worked(90%) = (total no. of agents worked(70%)/70) x 0.90 = 54

- I created a table using the pivot table, by taking the columns time bucket in row section and count of call seconds and percentage of call seconds (expressed by count of call status),and time distribution column as the decimal value of grand total of count of call seconds.
- Now to calculate minimum no. of agents required to reduce abandon rate to 10% I used the formula:

no. of agents req in each time bucket = time distribution * 54

- The insights will help the company to maintain the abandon rate of 10% if they have 54 agents working.



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

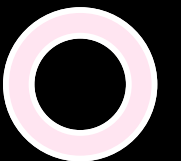
Given :

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

Night Shift Manpower Planning:

average incoming call	5130
avg incoming call at night 9pm to 9am (30% of 5130)	1539
average seconds required to answer call (avg incoming call at night * avg calls answered)	305676.18
average hours required to answer call	84.91
max abandon rate should be 10%	
actual required hours to answer call	76.42
we have given that the actual working hours are 4.5	
no. of agents required to answer call are	17

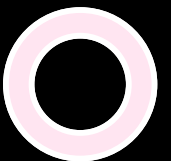
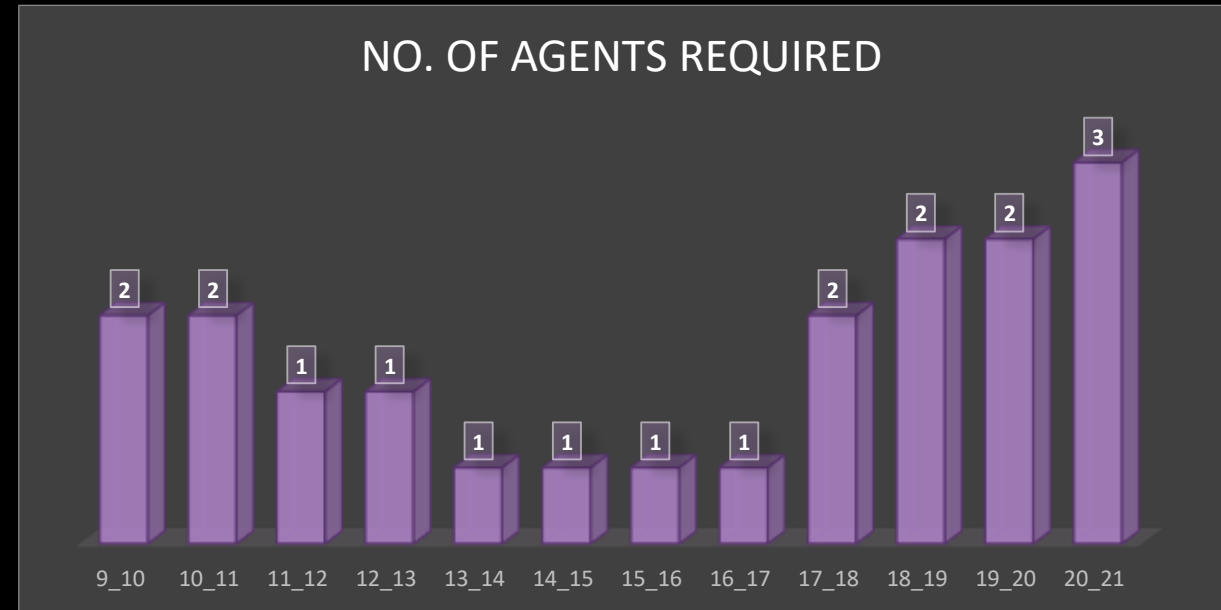
Total number of agents
required = 17



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

Distribution of agents by time bucket :

Time Bucket	Call Distribution	Time Distribution	No. of Agents required
9_10	3	0.10	2
10_11	3	0.10	2
11_12	2	0.07	1
12_13	2	0.07	1
13_14	1	0.03	1
14_15	1	0.03	1
15_16	1	0.03	1
16_17	1	0.03	1
17_18	3	0.10	2
18_19	4	0.13	2
19_20	4	0.13	2
20_21	5	0.17	3
Grand Total	30	1.00	17



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

INSIGHTS :

- Created a pivot table and used days from date & time column in the rows section, call_status in the column section and count of call status in the value section.
- Total no. Calls for 23 days came out to be 117988
average number of calls = (total number of calls/23) = 5130
- There are about 5130 calls a day
- We have given 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.
- So I've calculated the planning by using the formulas

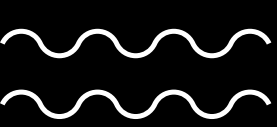
1) Average incoming call at night 9 am to 9 pm = 30% of 5130 = 1539

2) Average seconds required to answer call = average incoming calls at night x average calls answered

$$= 1539 * 198.62(\text{calculated in first task}) = 305676.18$$

3) Average hours required to answer call = average seconds req to answer call / 3600
= 305676.18 / 3600
= 84.91



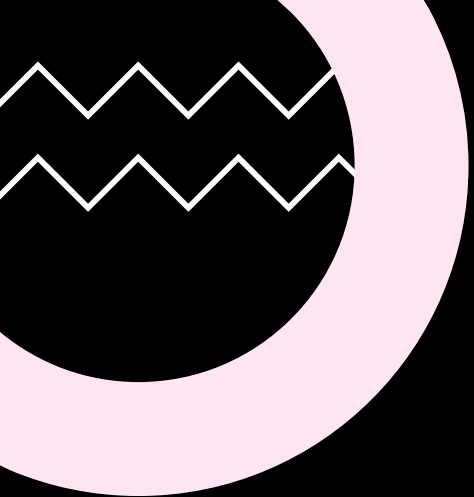


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INSIGHTS :

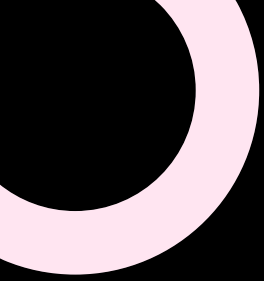
- Keeping the maximum abandon rate to 10%
Average hours required to answer calls with 10 % abandon rate = avg hours req to answer calls x 0.90
$$= 84.91 \times 0.90 = 76.42$$
- Given actual working hours is 4.5 therefore,
no. of agents required to answer call = Average hours required to answer calls with 10 % abandon rate / 4.5
$$= 76.42 / 4.5 = 17$$
- So, total no. of agents required to answer calls between 9 pm to 9 am is 17
- To calculate the agents required for each time bucket between 9pm to 9am, we need to find the distribution by dividing each call distribution to total call distribution i.e. 30
- Finally, total no. agents required to answer calls between 9pm to 9am is = time distribution x 17





Conclusions





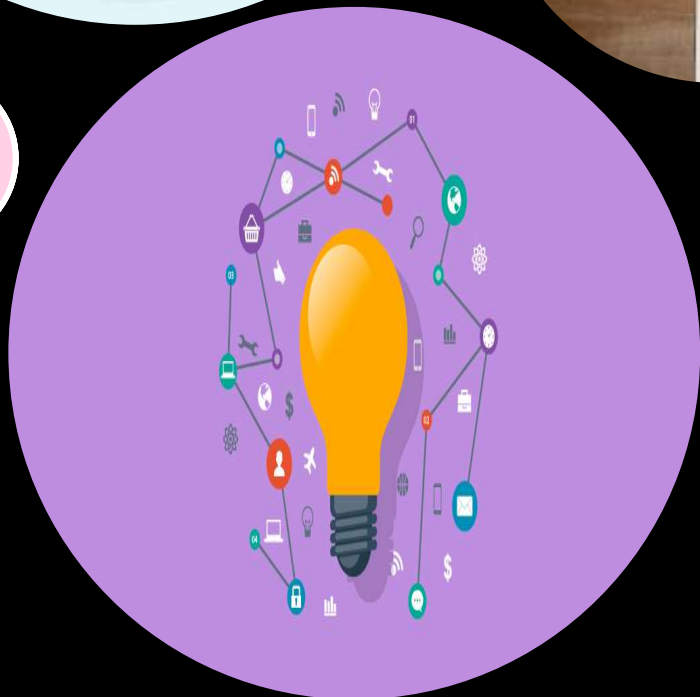
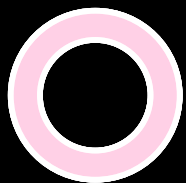
- ❖ During the data cleaning part there were outliers that I didn't removed as the outcome would have changed and the margin of outliers were not big
- ❖ I saw a downward trend in the average duration of call, meaning there were less calls in the evening
- ❖ I also saw there are more call abandons in the morning, company should optimize the workforce accordingly as there were not much calls in the evening so the number agents can be increased in morning
- ❖ To keep the abandon rate to 10% at night i.e. 9pm to 9am, company should hire 17 agents to handle calls or can also shift the day workers to night





Result

The project taught me a great amount of things from how to manage data to proposing a plan for optimizing the workforce. I also used various tools and functions like average, sum, count, pivot table etc. I used my knowledge to bring out the insights from the data that will help the company to take data driven decisions



THANK YOU

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