

T TRAINITY

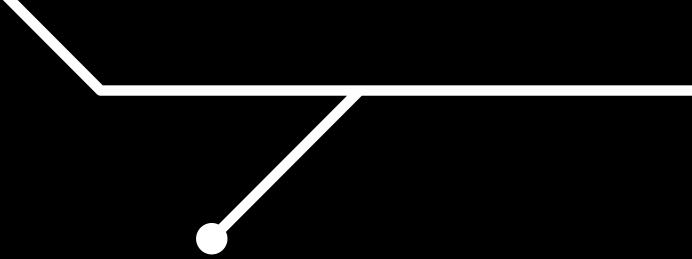
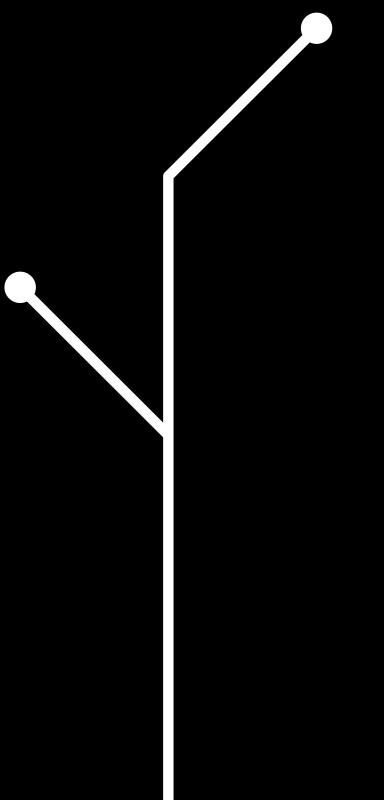
ABC CALL

VOLUME TREND

PRESENTED BY : DHIVYALAKSHMI R



AGENDA

- ***PROJECT DESCRIPTION***
 - ***APPROACH***
 - ***TECH STACK - USED***
 - ***INSIGHTS***
 - ***TASKS***
 - ***RESULTS***
 - ***DRIVE LINK***
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PROJECT DESCRIPTION

- *The primary objective of this project is to analyze inbound calls made by customers and identify the challenges and pain points they encounter during interactions with the Customer Experience (CX) Inbound calling team.*
- *By examining a provided dataset, we aim to uncover specific issues such as long queue times, call transfers, and abandoned calls, with the goal of enhancing the overall user experience.*
- *Additionally, this project will focus on determining the optimal number of employees required to minimize the call abandon rate in the call center.*
- *Through an in-depth analysis of call volume, queue times, and customer demand patterns, we aim to accurately estimate workforce requirements for effectively handling incoming calls and reducing customer wait times.*

APPROACH

- *Data Collection and Preprocessing*
- *Exploratory Data Analysis (EDA)*
- *Customer Pain Point Analysis*
- *Workforce Optimization*
- *Performance Metrics and KPIs*
- *Recommendations and Action Plan*
- *Monitoring and Continuous Improvement*
- *Reporting and Visualization*
- *Implementation and Monitoring*



TECH-STACK USED



MICROSOFT EXCEL

INSIGHTS

1. **Identifying Customer Pain Points:** Recognizing issues faced by customers during calls, such as extended wait times or frequent call transfers.
2. **Peak Call Hour Identification:** Determining the busiest times for incoming calls to ensure that there is an adequate number of staff members available to handle them.
3. **Analyzing Call Status Distribution:** Evaluating the distribution of call outcomes, including those that were answered, transferred, or abandoned, in order to enhance call handling procedures.
4. **Agent Performance Assessment:** Assessing the effectiveness of agents based on factors such as call duration and customer satisfaction levels.
5. **Average Call Duration Evaluation:** Reviewing whether call durations align with providing effective customer service.
6. **Queue Time Analysis:** Examining waiting times within the call queue to identify opportunities for reducing customer wait times.
7. **Staffing Optimization:** Determining the optimal staffing levels based on call volume to minimize call abandonments and improve service.
8. **Recommendations for Service Enhancement:** Providing actionable suggestions for enhancing service quality, such as optimizing call management or implementing chatbots to offer faster assistance.



TASKS



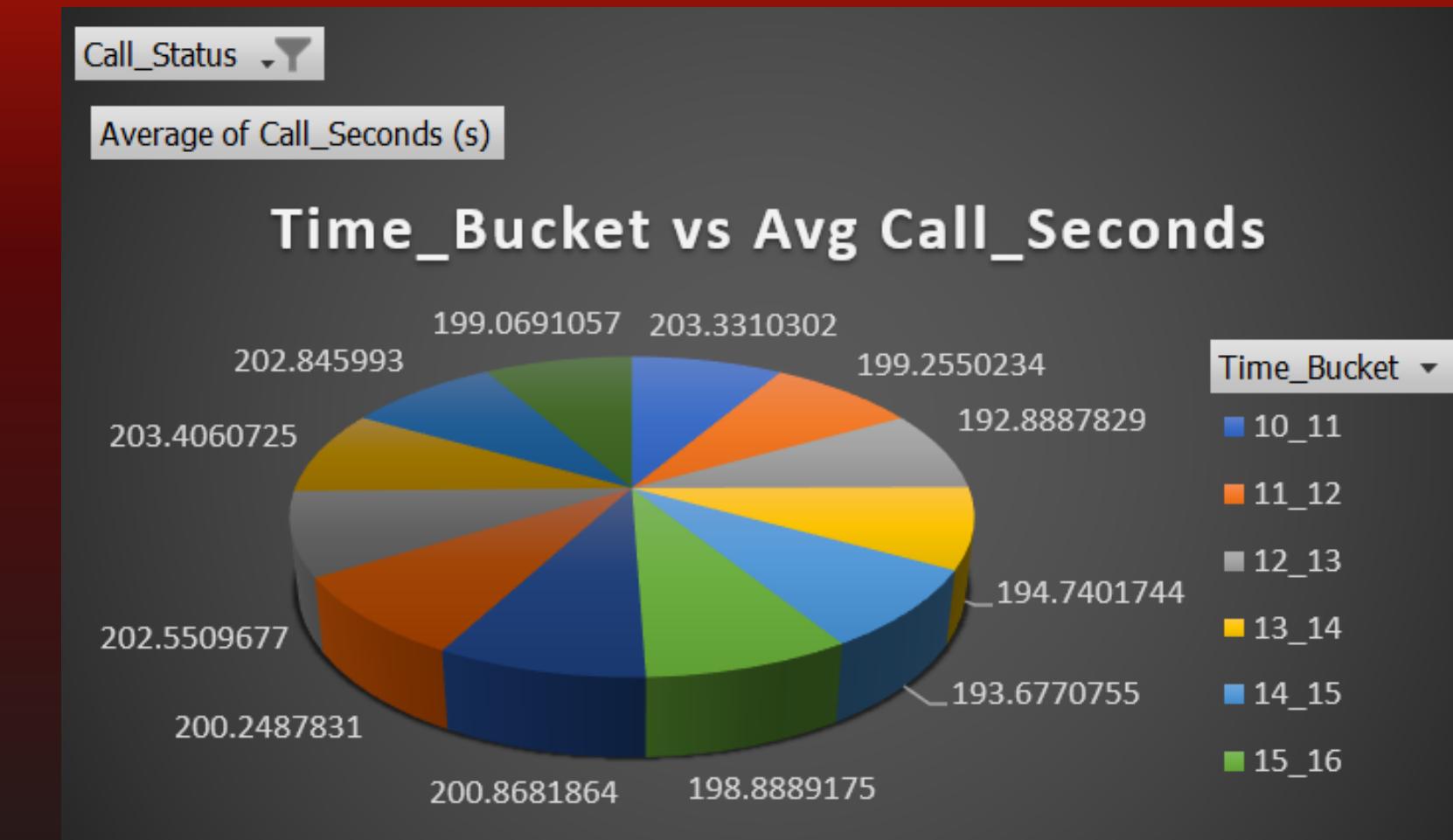
TASK 1

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

PIVOT TABLE

Call_Status	answered
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
Grand Total	198.6227745

PIE CHART



INSIGHTS

- **Peak Call Duration:** Calls during the "19_20" time slot are the longest, averaging 203.41 seconds.
- **Consistency:** Most time buckets have similar call durations, ranging from 192.89 to 203.41 seconds.
- **Morning and Evening:** Calls in the morning ("10_11") and late evening ("20_21") tend to be slightly longer than the daily average.
- **Lunchtime Dip:** The shortest average call duration occurs during lunchtime ("12_13") at 192.89 seconds.
- **Overall Average:** The overall average call duration across all time buckets is 198.62 seconds, serving as a benchmark.
- **Stable Call Handling:** Call durations are relatively consistent throughout the day, suggesting stable call management processes.

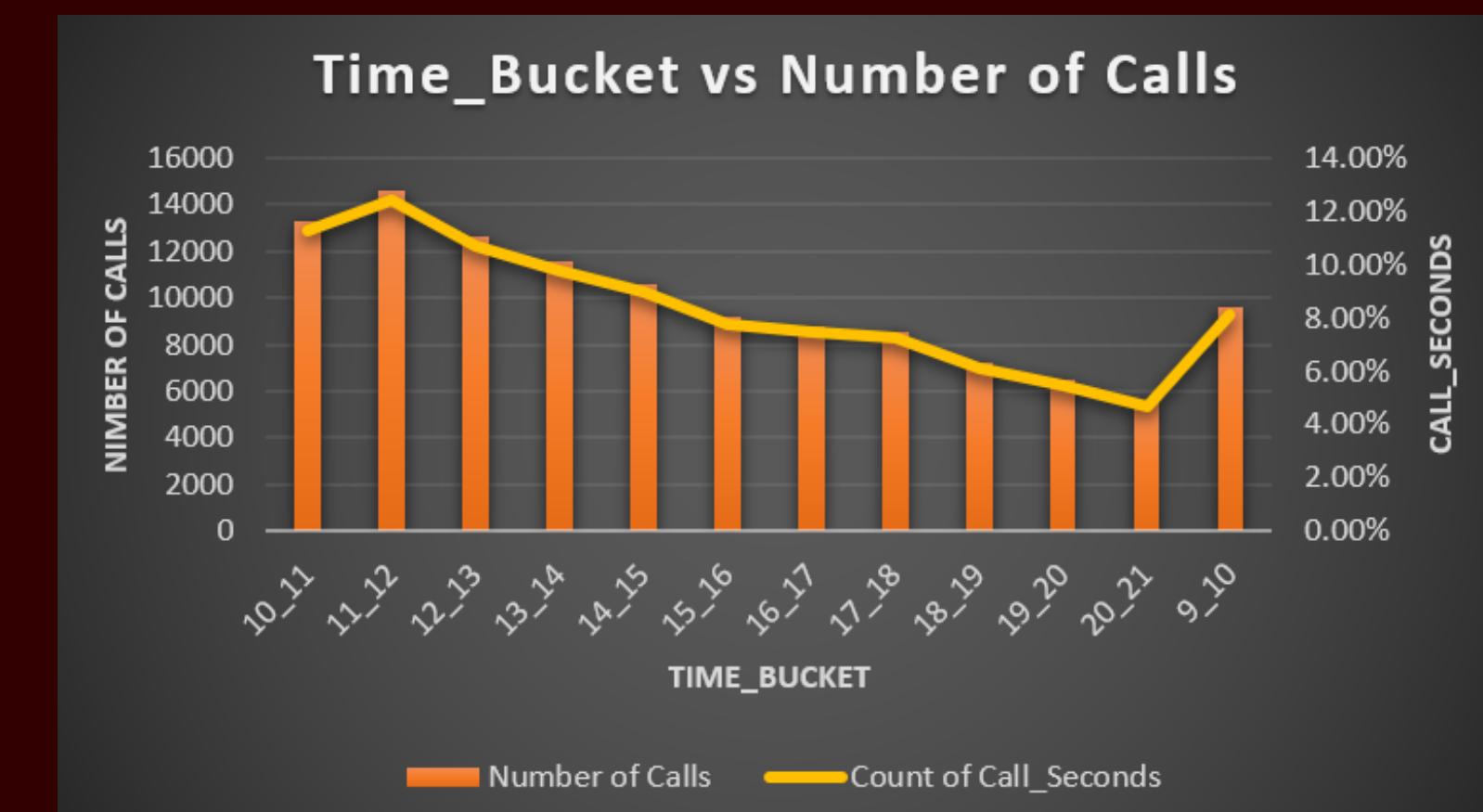
TASK 2

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.)

PIVOT TABLE

Time_Bucket	Number of Calls	Count of Call_Seconds (s)
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%
9_10	9588	8.13%
Grand Total	117988	100.00%

CLUSTERED COLUMN CHART



INSIGHTS

- **Peak Call Times:** The busiest time slots are "11_12" and "10_11," each accounting for over 12% of the total calls.
- **Evening Decline:** Call volume decreases gradually as the day progresses, with lower activity in the evening hours ("18_19," "19_20," and "20_21").
- **Stable Call Durations:** Call durations remain relatively consistent across time slots, indicating that the time of day does not significantly impact call length.
- **Lunchtime Dip:** "12_13" has a slight drop in call volume, likely due to lunch breaks.
- **Morning and Evening Activity:** Calls continue in the early morning ("9_10") and late evening ("20_21"), representing a notable portion of total call volume.
- **Total Call Count:** The dataset comprises a total of 117,988 calls, offering a comprehensive overview of call distribution throughout the day.

TASK 3

Manpower Planning: The current rate of abandoned calls is approximately 30%. Propose a plan for manpower allocation during each time bucket (from 9 am to 9 pm) to reduce the abandon rate to 10%. In other words, you need to calculate the minimum number of agents required in each time bucket to ensure that at least 90 out of 100 calls are answered.

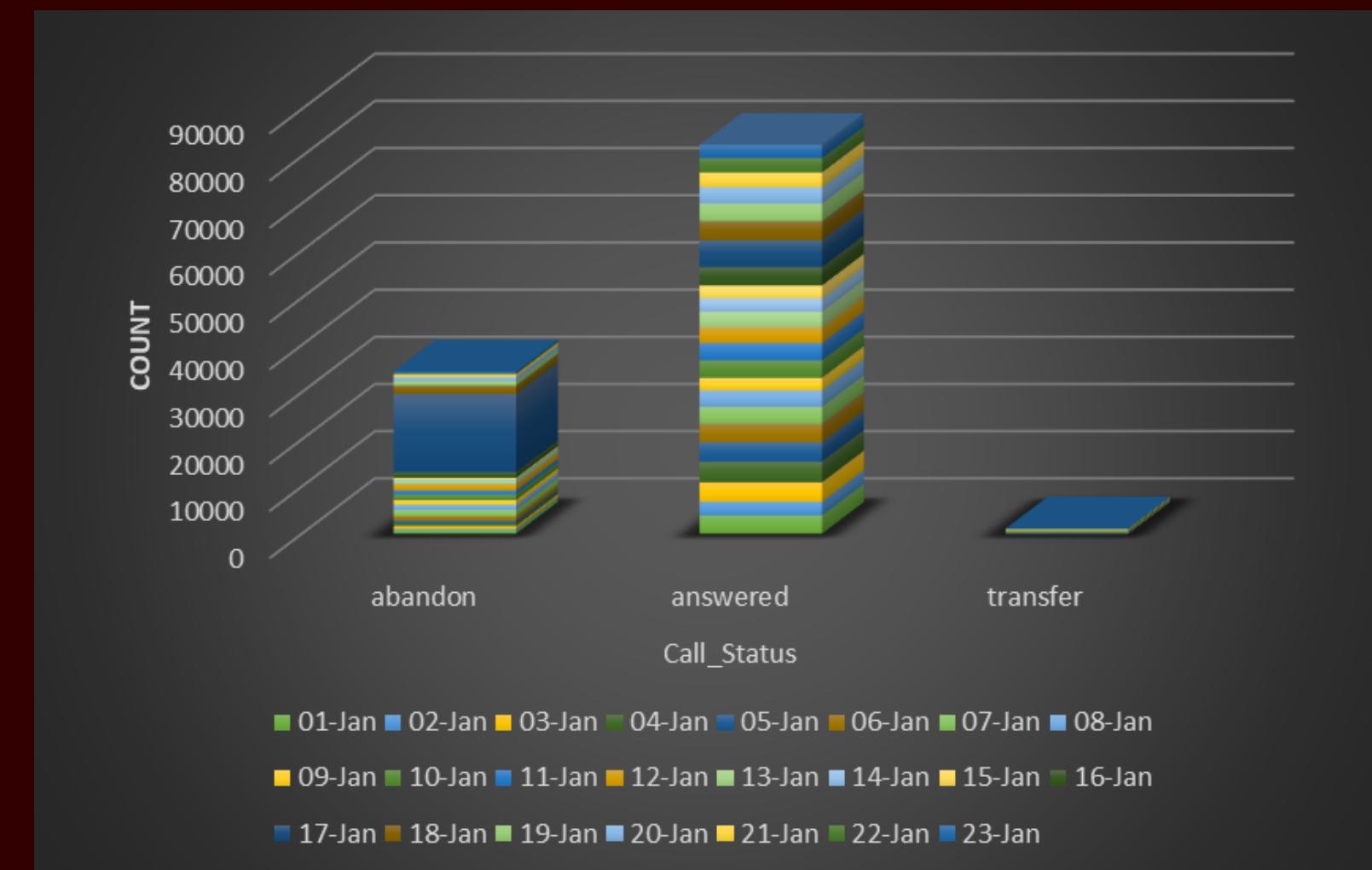
ASSUMPTIONS

NUMBER OF DAYS AGENT WORKS IN A WEEK	6 DAYS IN WEEK
UNPLANNED LEAVES PER AGENT	4 DAYS PER MONTH
AGENT TOTAL WORKING HOURS PER DAY	9 HOURS
SNACKS BREAK AND LUNCH TIME	1.5 HOURS
ACTUAL WORKING HOURS ON CUSTOMER CALL	4.5 HOURS

PIVOT TABLE

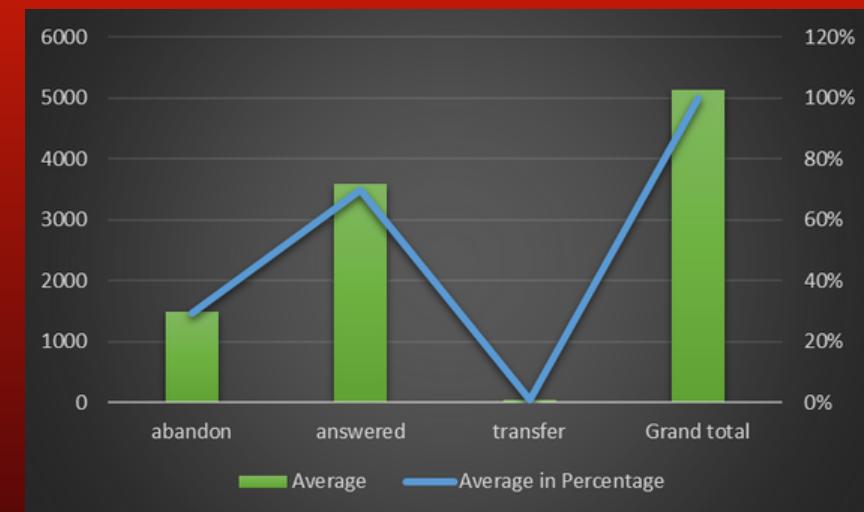
Date	abandon	answered	transfer	Grand Total
01-Jan	684	3883	77	4644
02-Jan	356	2935	60	3351
03-Jan	599	4079	111	4789
04-Jan	595	4404	114	5113
05-Jan	536	4140	114	4790
06-Jan	991	3875	85	4951
07-Jan	1319	3587	42	4948
08-Jan	1103	3519	50	4672
09-Jan	962	2628	62	3652
10-Jan	1212	3699	72	4983
11-Jan	856	3695	86	4637
12-Jan	1299	3297	47	4643
13-Jan	738	3326	59	4123
14-Jan	291	2832	32	3155
15-Jan	304	2730	24	3058
16-Jan	1191	3910	41	5142
17-Jan	16636	5706	5	22347
18-Jan	1738	4024	12	5774
19-Jan	974	3717	12	4703
20-Jan	833	3485	4	4322
21-Jan	566	3104	5	3675
22-Jan	239	3045	7	3291
23-Jan	381	2832	12	3225
Grand Total	34403	82452	1133	117988

STACKED COLUMN CHART



From pivot table, calculate call status averages. Then, convert these averages into percentages by dividing each by the total sum and multiplying by 100 to understand the distribution.

Call_Status	abandon	answered	transfer	Grand total
Average	1496	3585	49	5130
Average in Percentage	29%	70%	1%	100%



Average Call duration (in Hours)	198.62
Working hours per agent (in Hours)	4.5
Total Agents	44

The calculation reveals that there are a total of 44 agents working, based on an average of 198.82 call hours per day in the company and each agent working a 4.5-hour shift.

To achieve a 10% abandon rate, the number of agents required can be calculated using the formula:

For 90 % attending calls need (in Hours)	254.7293904
Total agents needed to reduce abandon rate the 10%	57

- For 90% hours = $5130(\text{Avg of Grand Total}) * 198.62(\text{Avg Call Duration}) * 0.9 / 3600$
- Total agents needed = $254.7293904 / 4.5(\text{Working hours of per agent})$

AGENTS REQUIRED IN EACH TIME BUCKET

Time_Bucket	Count of Call_Seconds (s)	Required_Agents
10_11	11.28%	6
11_12	12.40%	7
12_13	10.72%	6
13_14	9.80%	6
14_15	8.95%	5
15_16	7.76%	4
16_17	7.45%	4
17_18	7.23%	4
18_19	6.13%	3
19_20	5.48%	3
20_21	4.67%	3
9_10	8.13%	3
Grand Total	100.00%	57

INSIGHTS

- **Average Call Duration:** The average call duration is approximately 198.62 hours, providing a baseline for call handling times.
- **Working Hours per Agent:** Each agent works for 4.5 hours, and there are a total of 44 agents, forming the available workforce.
- **90% Call Attendance Requirement:** To maintain a 90% call attendance rate, 254.73 hours are required, setting a service level target.
- **Total Agents Required:** To achieve a 10% abandon rate and ensure efficient service, 57 agents are needed.
- **Time Bucket Analysis:** The data shows varying call volumes across different time buckets, indicating the need for effective resource allocation. Peak hours require more agents, while off-peak hours allow for reduced staffing.
- **Total Call Distribution:** In total, 57 agents are needed to meet service level goals.
- By adhering to the recommended manpower plan, the call center can enhance the utilization of its agent resources, enhance overall efficiency, and deliver improved customer service. This can be accomplished by decreasing the abandon rate and increasing the rate of answered calls within the designated time frame.

TASK 4

Night Shift Manpower Planning: Customers also call ABC Insurance Company at night but don't get an answer because there are no agents available. This creates a poor customer experience. Assume 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.

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	

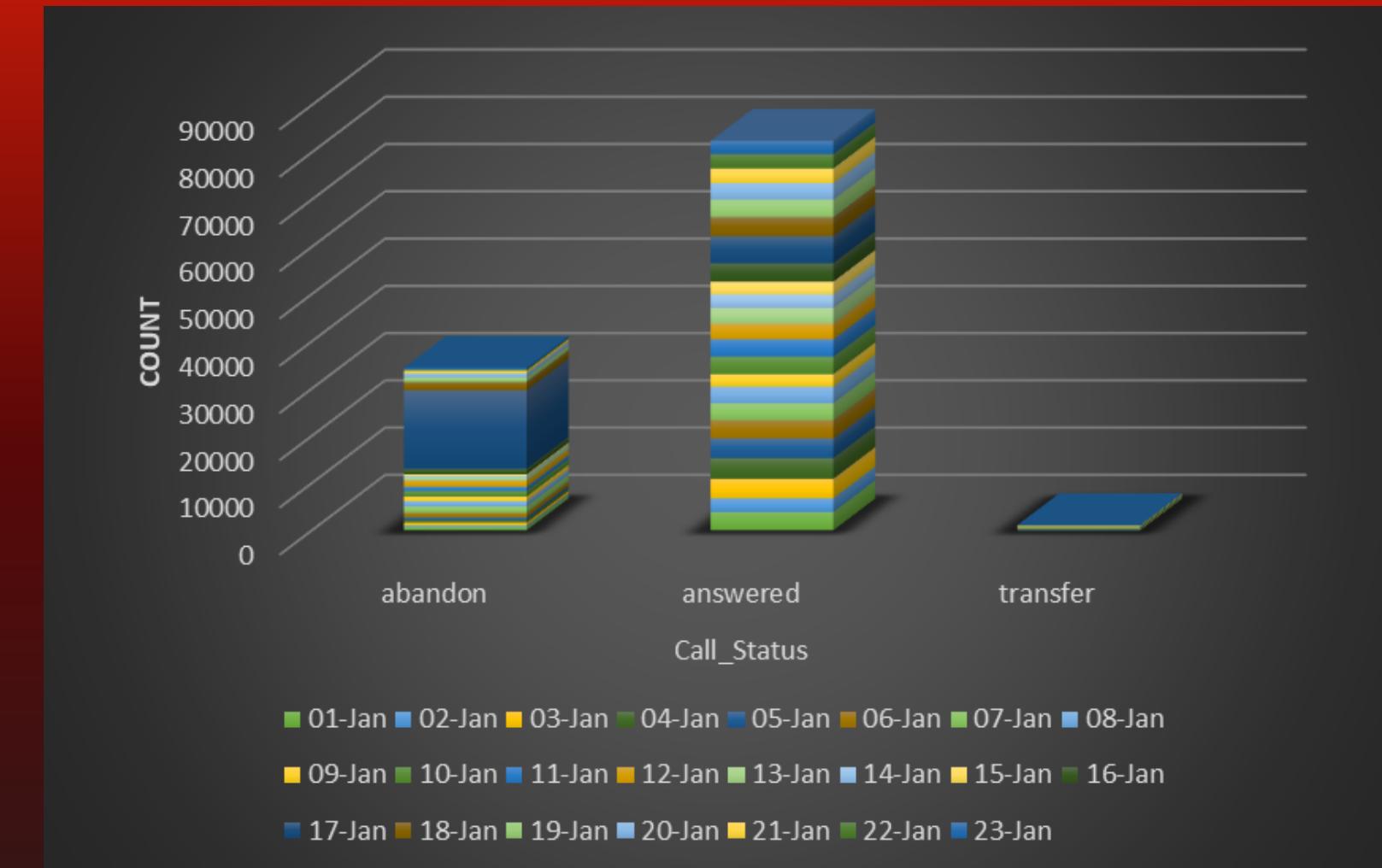
Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%

PIVOT TABLE

Count of Duration(hh:mm) Call_Status

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Average Call duration (in Hours)	198.62
Working hours per agent (in Hours)	4.5
Total Agents	44

The calculation reveals that there are a total of 44 agents working, based on an average of 198.82 call hours per day in the company and each agent working a 4.5-hour shift.

Calculation

Average no of calls at night	1539
Additional hours required	54
Agents needed in night	12

Number of Nighttime Calls: Number of nighttime calls = 30% of total calls

$$\text{Number of nighttime calls} = 0.30 * 5130 = 1539 \text{ calls}$$

Additional Hours Needed to Achieve a 10% Abandon Rate: Additional hours needed = (Number of nighttime calls) * (Average call duration / Total calls) * (1 - Abandon Rate)

$$\text{Additional hours needed} \approx 1539 * (198.82 / 5130) * 0.9 \approx 54 \text{ hours}$$

Number of Agents Required: Number of agents required = Additional hours needed / Working hours per agent

$$\text{Number of agents required} \approx 54 / 4.5 \approx 12 \text{ agents}$$

AGENTS REQUIRED IN EACH TIME BUCKET

Time_Bucket	Call_Distribution	Percentage of Call_Distribution	Agents needed	Final Agents needed
9pm - 10pm	3	10	1	1
10pm - 11pm	3	10	1	1
11pm - 12pm	2	6.67	1	1
12am - 1am	2	6.67	1	1
1am - 2am	1	3.33	0.4	1
2am - 3am	1	3.33	0.4	1
3am - 4am	1	3.33	0.4	1
4am - 5am	1	3.33	0.4	1
5am - 6am	3	10	1	1
6am - 7am	4	13.33	2	2
7am - 8am	4	13.33	2	2
8am - 9am	5	16.67	2	2
Grand Total	30	100	12	15

Certainly, when round 0.4 to the nearest whole number, it becomes 1, and this means you need 15 agents for your task.



INSIGHTS

- **Average Calls:** On average, the company receives 5130 calls from 9 am to 9 pm.
- **Calls at Night:** During the night, between 9 pm and 9 am, about 30% of the calls are made. This means there are 1539 calls during this time.
- **Additional Hours:** To make sure only 10% of calls are abandoned, the company needs 54 extra hours of agent availability during the night period.
- **Number of Agents:** When we divide the 54 extra hours needed by the hours worked by one agent (4.5 hours), we find that about 12 agents are required.
- **Rounding Off:** Since we can't have a fraction of an agent, we round up to the nearest whole number, which is 15 agents needed to meet the staffing requirements.
- In conclusion, the plan suggests having around 15 agents available throughout the day, considering the different call patterns and customer needs. This plan aims to reduce abandoned calls and improve the customer experience both during the day and night



RESULT



- **Insights on customer challenges:** Identified issues like long queue times, call transfers, and abandoned calls.
- **Peak call hours:** Discovered busiest call times for better staffing and resource allocation during high-demand periods.
- **Agent performance evaluation:** Recognized top-performing agents and areas for improvement based on call duration, resolution, and customer satisfaction.
- **Queue time analysis:** Pinpointed peak waiting periods and provided recommendations to reduce wait times and enhance customer satisfaction.
- **Optimal staffing strategies:** Developed strategies based on call volume and demand patterns to lower call abandon rates and ensure prompt customer service.
- In summary, these insights have led to an improved customer experience, reduced call abandonment rates, and optimized staffing levels for the CX Inbound calling team.

Drive link for Excel Sheet:

[https://drive.google.com/drive/folders/140-I--5kdo4cSmcTiM_p7wTVOOTnbMAI?](https://drive.google.com/drive/folders/140-I--5kdo4cSmcTiM_p7wTVOOTnbMAI?usp=drive_link)
usp=drive_link

Drive link for Entire Project:

[https://drive.google.com/drive/folders/laER5esGZQ5gY4Z9ttGx9pDYaNWfNt2DP?](https://drive.google.com/drive/folders/laER5esGZQ5gY4Z9ttGx9pDYaNWfNt2DP?usp=sharing)
usp=sharing

THANK YOU!

for your attention