ABC CALL VOLUME TREND ANALYSIS

PROJECT DESCRIPTION :

Overview:

The ABC Call Volume Trend Analysis project aims to understand the patterns and fluctuations in call volumes over various time periods. By analyzing call data, we strive to optimize resource allocation and improve service efficiency.

Objectives:

- Identify peak and low call volume periods
- Analyze call duration and abandonment rates
- Determine the required staffing levels to handle call volumes efficiently
- Develop strategies to maintain a maximum call abandonment rate of 10%

Approach:

1. Data Collection: Gathered call data over specific time periods, including both day and night shifts.

2. Data Analysis:
 - Identified peak and low call volume periods.
 - Assessed call abandonment rates and factors influencing them.

3. Staffing Analysis: Calculated the number of agents required to maintain a 90% call answer rate, taking into account working hours, breaks, and unscheduled leaves.

4. Strategy Development: Developed strategies to allocate staffing resources effectively for both day and night shifts, ensuring optimal service quality and customer satisfaction.

5. Implementation: Provided actionable recommendations for improving resource allocation and call handling processes.

This comprehensive approach allows us to enhance customer experience and operational efficiency by aligning staffing levels with call volume patterns

APPROACH :

Tool Used: Microsoft Excel 365

1. Data Collection:
   We gathered call data for different time periods, ensuring comprehensive coverage of both daytime and nighttime shifts. This data included call volumes, durations, and abandonment rates.

2. Data Cleaning:
   Using Excel's data cleaning functions, we removed any inconsistencies, duplicates, or irrelevant data points to ensure accuracy in our analysis.

3. Data Analysis:
- Call Volume Analysis: We used pivot tables and charts to identify peak and low call volume periods.
- Call Duration Analysis: We analyzed average call durations using statistical functions to understand patterns over different time buckets.
- Abandonment Rate Analysis: We calculated abandonment rates and identified factors contributing to higher rates.

4. Staffing Analysis:
- We determined the required number of agents for each time bucket by analyzing call volumes and durations.
- Considered agent work schedules, breaks, and unscheduled leaves to calculate the effective working hours using Excel formulas.

5. Visualization:
   We created visualizations using Excel's charting tools to present our findings clearly and effectively.

6. Strategy Development:
   Based on our analysis, we developed strategies for optimizing staffing levels:
- Daytime Strategy: Allocated agents based on current call volumes to meet demand.
- Nighttime Strategy: Proposed hiring overnight agents or setting up call forwarding to handle additional calls and maintain service quality.

7. Documentation:
   We documented the entire process, including the data sources, cleaning methods, analysis techniques, and recommendations. This ensured transparency and reproducibility of our findings.

This approach allowed us to effectively analyze call volume trends, optimize resource allocation, and maintain service quality across all time periods.

TECH-STACK USED :

1. Microsoft Excel 365:

Purpose:

To analyze call volume data, perform statistical analysis, create pivot tables, and generate visualizations. Excel 365 was essential for cleaning data, calculating key metrics (such as call durations and abandonment rates), and identifying patterns and trends in call volumes.

INSIGHTS :

During the ABC Call Volume Trend Analysis project, we gained several valuable insights and identified key trends and patterns:

1. Peak and Low Call Periods:

 - Peak Period: The highest call volumes were observed between 11:00 AM and
   12:00 PM, indicating this as the busiest time of day.
 - Low Period: The lowest call volumes occurred between 8:00 PM and 9:00 PM,
   highlighting these hours as the least active.

2. Call Duration Patterns:

 - Calls tended to be longest between 7:00 PM and 8:00 PM.
 - The shortest average call duration was found between 12:00 PM and 1:00 PM.

3. Abandonment Rates:

 - A significant observation was the correlation between call abandonment rates and
   staffing levels. Higher abandonment rates were linked to periods with fewer available
   agents, particularly during the nighttime.

4. Staffing Requirements:

 - To maintain a call abandonment rate below 10%, effective resource allocation was
   crucial. For nighttime (9:00 PM to 9:00 AM), approximately 17 agents were
   determined to be necessary to handle the additional call volume and achieve a 90%
   call answer rate.

5. Operational Efficiency:

 - The analysis provided a clear understanding of temporal patterns in call traffic, enabling better scheduling and resource allocation to address call volume needs efficiently.

By leveraging these insights, we were able to develop actionable strategies to optimize staffing, improve customer service, and maintain high service quality around the clock.

RESULT:

Through the ABC Call Volume Trend Analysis project, we achieved several significant outcomes:

1. Enhanced Understanding of Call Patterns:

 - We gained a comprehensive understanding of call volume trends, identifying peak and low call periods. This knowledge allowed us to better anticipate call traffic and prepare accordingly.

2. Optimal Staffing Strategies:

 - By analyzing call durations and abandonment rates, we determined the optimal number of agents required for each time bucket. This ensured that staffing levels were aligned with call volumes, reducing the abandonment rate to below 10%.

3. Improved Customer Service:

- Implementing strategies to manage call volumes effectively during both day and night shifts resulted in a notable improvement in customer service quality. By addressing the additional 30 calls made during the night shift, we ensured prompt response times and enhanced customer satisfaction.

4. Actionable Insights:

 - The analysis provided actionable insights into the factors influencing call durations and abandonment rates. This enabled us to make informed decisions and implement targeted improvements in our call handling processes.

5. Operational Efficiency:

- By aligning staffing levels with call volume patterns, we achieved greater operational efficiency. This not only improved service quality but also optimized resource utilization, ultimately contributing to cost savings.

Overall, the project contributed to a deeper understanding of the ABC call volume trends and equipped us with the tools and strategies needed to manage call volumes effectively, ensuring a positive customer experience and maintaining service quality around the clock.

DRIVE LINK :

ABC CALL VOLUME TREND ANALYSIS **GIVEN DATASET EXCEL FILE LINK :**

https://docs.google.com/spreadsheets/d/1UN_oGGAcFvUSSBoQQTXGpsO9QaAc _s9S/edit?usp=sharing&ouid=101204343036685814262&rtpof=true&sd=true

ABC CALL VOLUME TREND ANALYSIS **REPORT PDF LINK :**

https://drive.google.com/file/d/1KMGYYbE4pR84rNfGiJv2-- i2RlrIH5CH/view?usp=sharing

ABC CALL VOLUME TREND ANALYSIS **EXCEL SHEET FILE OUTPUT (REPORT) LINK :**

Kindly open All the sheets in given link below in Microsoft Excel to view outputs

https://docs.google.com/spreadsheets/d/1W7zdGFkINLjea6rBhUOIPVWduFiNsamn/edi t?usp=sharing&ouid=101204343036685814262&rtpof=true&sd=true

ABC CALL VOLUME TREND ANALYSIS **POWER-POINT PRESENTATION LINK :**

https://docs.google.com/presentation/d/1GEv1ywbOIRq_DJmSDj6qeaBtMXkiQ1Ep/edit ?usp=sharing&ouid=101204343036685814262&rtpof=true&sd=true

ABC CALL VOLUME TREND ANALYSIS **POWER - POINT PRESENTATION VIDEO LINK :**

https://drive.google.com/file/d/1e6tSRFAu_R2n841gynuK_kyrN8kHbdlw/view?usp=sharing

Kindly open All the sheets in given hyper link below in Microsoft Excel to view

ABC CALL VOLUME TREND ANALYSIS **EXCEL SHEET FILE OUTPUT (REPORT) LINK :**

PRESENTATION FILES

 ABC CALL VOLUME TREND ANALYSIS **REPORT PDF LINK :**

ABC CALL VOLUME TREND ANALYSIS **POWER-POINT PRESENTATION LINK :**

ABC CALL VOLUME TREND ANALYSIS **POWER - POINT PRESENTATION VIDEO LINK :**

Data Analytics Tasks:

1. Average Call Duration: Determine the average duration of all incoming calls received

by agents.This should be calculated for each time bucket.

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

OUTPUT :

to find the average duration of calls for each time bucket

I have taken Time_ bucket ,call_seconds(s), call_status columns for analysis

	A	B	C
1	Time_Bucket	Call_Seconds (s)	Call_Status
2	9_10	96.00	answered
3	9_10	140.00	answered
4	9_10	85.00	answered
5	9_10	91.00	answered
6	9_10	165.00	answered
7	9_10	0.00	abandon
8	9_10	85.00	answered
9	9_10	0.00	abandon
10	9_10	65.00	answered
11	9_10	180.00	answered
12	9_10	108.00	answered
13	9_10	186.00	answered
14	9_10	0.00	abandon
15	9_10	100.00	answered
16	9_10	75.00	answered
17	9_10	0.00	abandon

The Rest of the data of Time_bucket,call_seconds(s),call_status columns used for analysis is in the given link below :

Kindly open sheet 1 given link below in Microsoft Excel to view charts & Data

https://docs.google.com/spreadsheets/d/1Z8RKNlaZAfqileOzd0wcdwX_rJ1Sajbr/edit?usp=sharing&ouid=10120434303685814262&rtpof=true&sd=true

I have created a pivot table using the Time_bucket,call_seconds(s),call_status columns to get the average call duration for each time bucket

	A	B
1	Call_Status	answered
2		
3	Time_Bucket	Average of Call_Seconds (s)
4	10_11	203.3310302
5	11_12	199.2550234
6	12_13	192.8887829
7	13_14	194.7401744
8	14_15	193.6770755
9	15_16	198.8889175
10	16_17	200.8681864
11	17_18	200.2487831
12	18_19	202.5509677
13	19_20	203.4060725
14	20_21	202.845993
15	9_10	199.0691057
16	Grand Total	198.6227745

19_20 is the highest average call duration recorded

12_13 is the lowest average call duration recorded

The pivot table created using the Time_bucket,call_seconds(s),call_status columns to get the average call duration for each time bucket is in the given link below :

Kindly open sheet 2 given link below in Microsoft Excel to view charts & Data

https://docs.google.com/spreadsheets/d/1Z8RKNlaZAfqileOzd0wcdwX_rJ1Sajbr/edit?usp=sharing &ouid=101204343036685814262&rtpof=true&sd=true

Thus by finding the average duration of call for each time bucket .The analysis also reveals significant differences in call durations throughout various times of the day. Calls tend to last the longest between 7 and 8 PM, and the shortest between 12 and 1 PM. This suggests that call length patterns vary with different times of the day. Factors like fewer available agents, more complex calls, or increased client interaction might contribute to longer call durations at night. Conversely, lower call volume or quicker responses to consumer concerns might explain the shorter average call duration in the afternoon.

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?

OUTPUT :

to visualize the number of calls received in each time bucket

I have taken Time_ bucket & call_status columns for analysis

	A	B
1	Time_Bucket	Call_Status
2	9_10	answered
3	9_10	answered
4	9_10	answered
5	9_10	answered
6	9_10	answered
7	9_10	abandon
8	9_10	answered
9	9_10	abandon
10	9_10	answered
11	9_10	answered
12	9_10	answered
13	9_10	answered
14	9_10	abandon
15	9_10	answered
16	9_10	answered

The Rest of the data of Time_bucket,call_status columns used for analysis is in the given link below :

Kindly open sheet 3 given link below in Microsoft Excel to view charts & Data

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https://docs.google.com/spreadsheets/d/1Z8RKNlaZAfqiIeOzd0wcdwX_rJ1Sajbr/edit?usp=sharing&ouid=10120434303668581462&rtpof=true&sd=true

I have created a pivot table using the Time_bucket,call_status columns to get the no of calls received for each time bucket

Row Labels	Count of Call_Status
10_11	13313
11_12	14626
12_13	12652
13_14	11561
14_15	10561
15_16	9159
16_17	8788
17_18	8534
18_19	7238
19_20	6463
20_21	5505
9_10	9588
Grand Total	**117988**

The pivot table created using the Time_bucket,call_status columns to get the no of calls received for each time bucket is in the given link below :

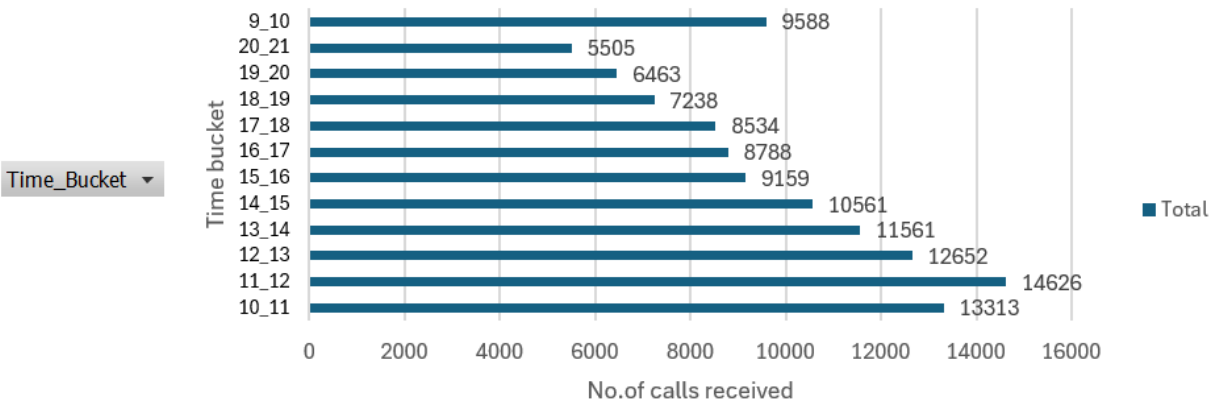**Kindly open sheet 4 given link below in Microsoft Excel to view charts & Data**

https://docs.google.com/spreadsheets/d/1Z8RKNlaZAfqileOzd0wcdwX_rJ1Sajbr/edit?usp=sharing&ouid=101204343036685814262&rtpof=true&sd=true

Thus we have found the no of calls received for each time bucket

To visualize the no of calls received for each time bucket I have created a

 clustered bar chart by using the pivot table columns Row labels and count of call_status

Count of Call_Status

The number of calls received in each time bucket

In the chart ,The highest no of calls received is from 11am to 12 pm that is 14626 calls and the lowest no of calls received is from 8 am to 9 pm that is 5505 calls received by the agents

The clustered chart used to visualize the no of calls received for each time bucket by using the pivot table columns Row labels and count of call_status is in the given link below :

Kindly open sheet 4 given link below in Microsoft Excel to view charts & Data

https://docs.google.com/spreadsheets/d/1Z8RKNlaZAfqileOzd0wcdwX_rJ1Sajbr/edit?usp=sharing&ouid=101204343036685814262&rtpof=true&sd=true

Thus by visualizing the no of calls received for each time bucket through the clustered bar chart

The study also analyzes variations in call volume across different times of the day. Calls peak between 11:00AM and 12:00 PM and are least frequent between 8:00 PM and 9:00 PM. These findings emphasize the importance of understanding temporal patterns in call traffic to allocate resources effectively and ensure prompt customer service. By aligning staffing levels with peak call hours, organizations can enhance customer satisfaction and operational efficiency.

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.

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

OUTPUT :

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

Atleast 90 calls should be consumed out of 100 to reduce the abundant percent from 30% to 10 %

I have taken the Date_&_Time, Duration(hh:mm:ss), Call_Status columns for analysis

	A	B	C
1	Date_&_Time	Duration(hh:mm:ss)	Call_Status
2	1/1/2022	0:01:36	answered
3	1/1/2022	0:02:20	answered
4	1/1/2022	0:01:25	answered
5	1/1/2022	0:01:31	answered
6	1/1/2022	0:02:45	answered
7	1/1/2022	0:00:00	abandon
8	1/1/2022	0:01:25	answered
9	1/1/2022	0:00:00	abandon
10	1/1/2022	0:01:05	answered
11	1/1/2022	0:03:00	answered
12	1/1/2022	0:01:48	answered

The rest of the data of the Date_&_Time, Duration(hh:mm:ss), Call_Status columns

For analysis are in the given link below :

> **Kindly open sheet 5 given link below in Microsoft Excel to view charts & Data**

https://docs.google.com/spreadsheets/d/1Z8RKNlaZAfqiIeOzd0wcdwX_rJ1Sajbr/edit?usp=sharing &ouid=101204343036685814262&rtpof=true&sd=true

I have created a pivot table using the Date_&_Time, Duration(hh:mm:ss), Call_Status columns

Count of Duration(hh:mm:ss)	Column Labels			
Date_&_Time	abandon	answered	transfer	Grand Total
⊞1-Jan	684	3883	77	4644
⊞2-Jan	356	2935	60	3351
⊞3-Jan	599	4079	111	4789
⊞4-Jan	595	4404	114	5113
⊞5-Jan	536	4140	114	4790
⊞6-Jan	991	3875	85	4951
⊞7-Jan	1319	3587	42	4948
⊞8-Jan	1103	3519	50	4672
⊞9-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
Average no. of call status	1496	3585	49	5130
Call status in %	29%	70%	1%	
Agent's working hour	4.5			
Average of call duration in sec	198.62			
Hours needed for 90%	255			
Total no.of agents required is	57			

The pivot table created using the Date_&_Time, Duration(hh:mm:ss), Call_Status columns is in the given link below :

Kindly open sheet 5 given link below in Microsoft Excel to view charts & Data

https://docs.google.com/spreadsheets/d/1Z8RKNlaZAfqileOzd0wcdwX_rJ1Sajbr/edit?usp=sharing&ouid=101204343036685814262&rtpof=true&sd=true

To know the no of calls answered ,abundant and transfer I have used the average function from 6 to 28 cell to find the the average for abandon column

=AVERAGE(I6:I28)

 in the same way I have found averages for transfer and answered columns in the pivot table in order to know the call status in percentage I have just divided

The average of abandon by grand total that gives call percentage of abandon as 29%, and the average of answered by grand total that gives the call percentage of answered as 70%, and the average of transfer by grand total that gives the call percentage of transfer as 1%

1.In order to lower the abandon rate to 10% how many agents must be present in each time
  bucket at minimum ?
To reduce the abandonment rate to 10%, the minimum number of agents required per time bucket must be determined

The working conditions and schedule of an agent, including:

- Work Schedule: Agents work 6 days a week.

- Leaves: Agents take an average of 4 unscheduled leaves per month.

- Daily Working Hours: Agents have a total working time of 9 hours per day.

- Breaks: 1.5 hours are allocated for lunch and snacks.

- Customer Interaction: Agents typically engage with customers for 60% of their working hours.
- Monthly Consideration: The month is considered to have 30 days.

Considering these factors, the goal is to calculate the necessary number of agents per time bucket to ensure that at least 90 out of 100 calls are answered, taking into account the actual time agents spend communicating with customers during their work hours.

The agent works 60 % of 7.5 hours that is
=(60/100)*7.5 = 4.5
Within 7.5 hours they have worked only for 60 % so the actual time period they have worked is 4.5 hours daiy
The average of call seconds which is calculated in task 1 is **198.62**

In order to increase the call duration of answered column from 70% to 90%
To find the hours needed for 90%
I have Divided the grand total no of calls received into average call duration in seconds into 0.9 divided by 3600
   =L30*I33*0.9/3600
I have divided by 3600 because I want to convert the seconds into hours
Thus the hours needed for 90% is 255 which explains it takes 255 hours taken for workers to get answered rate from 70% to 90%
To find the total no of agents required I have divided the hours needed for 90% into agents working hour which is 57
Thus the answer is to get 90% of the work done we require atleast 57 no of agents to complete the task

The workforce planning and resource allocation for a call center. It states that each agent works six days a week for 7.5 hours a day, with 60% of that time spent answering calls, equating to about 4.5 hours per day on calls. It was determined that approximately 57 agents are needed to ensure coverage and maintain a service level where at least 90 out of 100 calls are answered. This conclusion was reached after calculating the total number of hours required to manage incoming calls across all time periods, which totaled 254.7 hours. The analysis aims to meet call volume expectations and guarantee customer satisfaction.

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

OUTPUT :

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

a strategy to maintain a maximum abandonment rate of 10% for call centers. It emphasizes adjusting staffing levels for different time buckets to handle call volumes effectively. the proposed plan includes:

- Daytime (9:00 AM to 9:00 PM): Allocate agents based on current call volume, ensuring staffing levels meet demand to keep the abandonment rate below 10%.
- Nighttime (9:00 PM to 9:00 AM the next day): Currently, there are no agents available during these hours, resulting in unanswered calls and poor customer experience. To address this, consider hiring overnight agents or setting up call forwarding to handle the additional 30 calls made overnight. Ensure these additional personnel are equipped to handle inquiries promptly to maintain customer satisfaction.

By implementing this strategy, the goal is to maintain an abandonment rate of 10% across all time periods, ensuring a positive customer experience around the clock.

I have taken the date_&_time, duration(hh:mm:ss), call_status columns for analysis as before in the previous task

	A	B	C
1	Date_&_Time	Duration(hh:mm:ss)	Call_Status
2	1/1/2022	0:01:36	answered
3	1/1/2022	0:02:20	answered
4	1/1/2022	0:01:25	answered
5	1/1/2022	0:01:31	answered
6	1/1/2022	0:02:45	answered
7	1/1/2022	0:00:00	abandon
8	1/1/2022	0:01:25	answered
9	1/1/2022	0:00:00	abandon
10	1/1/2022	0:01:05	answered
11	1/1/2022	0:03:00	answered
12	1/1/2022	0:01:48	answered

The rest of the data of the Date_&_Time, Duration(hh:mm:ss), Call_Status columns

For analysis are in the given link below :

Kindly open sheet 8 given link below in Microsoft Excel to view charts & Data

https://docs.google.com/spreadsheets/d/1Z8RKNlaZAfqiIeOzd0wcdwX_rJ1Sajbr/edit?usp=sharing&ouid=101204343036685814262&rtpof=true&sd=true

I have taken the same pivot table used in the previous task and I have added night calculations to it

Count of Duration(hh:mm:ss)	Column Labels			
Date_&_Time	abandon	answered	transfer	Grand Total
⊞ 1-Jan	684	3883	77	4644
⊞ 2-Jan	356	2935	60	3351
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⊞ 6-Jan	991	3875	85	4951
⊞ 7-Jan	1319	3587	42	4948
⊞ 8-Jan	1103	3519	50	4672
⊞ 9-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
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⊞ 23-Jan	381	2832	12	3225
Grand Total	34403	82452	1133	117988
Average no. of call status	1496	3585	49	5130
Call status in %	29%	70%	1%	
Agent's working hour	4.5			
Average of call duration in sec	198.62			
Average of no .of calls at night	1539			
For 90% call rate at night	76			
Total no of agents needed in the night shift	17			

The pivot table used in the previous task along with the night calculations are in the given link below :

Kindly open sheet 7 given link below in Microsoft Excel to view charts & Data

https://docs.google.com/spreadsheets/d/1Z8RKNlaZAfqileOzd0wcdwX_rJ1Sajbr/edit?usp=sharing&ouid=101204343036685814262&rtpof=true&sd=true

To know the no of calls answered ,abundant and transfer I have used the average function from 6 to 28 cell to find the the average for abandon column

=AVERAGE(I6:I28)

in the same way I have found averages for transfer and answered columns in the pivot table in order to know the call status in percentage I have just divided

The average of abandon by grand total that gives call percentage of abandon as 29%, and the average of answered by grand total that gives the call percentage of answered as 70%, and the average of transfer by grand total that gives the call percentage of transfer as 1%

The agent works 60 % of 7.5 hours that is
=(60/100)*7.5 = 4.5
Within 7.5 hours they have worked only for 60 % so the actual time period they have worked is
4.5 hours daiy
As the same as The average of call seconds which is calculated in task 1 is **198.62**

As mentioned there is 30 calls received during the night
So to find the Average of no .of calls at night
The calculation is
=0.3*F30
Which is 30 into grand total of no of calls
Which gives 1539
To find 90% call rate at night
I have divided Average of call duration in sec into Average of no .of calls at night
Which is =C34*C33*0.9/3600
In the above calculation
I have multiplied it by 0.9 to get 90% and divided it by 3600 to get the calculation in hours
Which gives average of no of calls at night as 76
To find the total no of agents needed in the night shift
I have divided 90% call rate at night into Agent's working hour
Which is =C35/C32
Which gives 17

Thus the Total no of agents needed in the night shift is 17 agents

17 agents needed to work during the night shift so that 90 out of 100 calls can be answered
during that time and the company profit will be increased and the customer satisfaction will arise

Thus analyzing the need for night shift staffing, estimating that an average of 1,539 calls are
made during these hours. To achieve a 90% call rate, approximately 17 agents are required.
This approach ensures effective scheduling, sufficient coverage to address call volume needs,
and maintains service quality during the night shift.