ABC CALL VOLUME TREND ANALYSIS

HYPERLINK OF MY EXCEL SHEET

Project Description:

- ABC is a Call center which has a Customer Experience team for the voice process. 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.

- You'll be provided with a dataset that spans 23 days and includes various details such as the agent's name and ID, the queue time (how long a customer had to wait before connecting with an agent), the time of the call, the duration of the call, and the call status (whether it was abandoned, answered, or transferred).

- 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.

Tech-Stack Used:

- I've used Microsoft Power point version 2309 to create this presentation.

- I've used Microsoft Excel version 2309 to implement the task assigned.

- I chose Microsoft Excel because it is the most convenient spreadsheet and can be used efficiently to view statistics and analyze the data set given very quickly.

Approach:

THE DATA ANALYSIS PROCESS

Step 1: Define the question

Step 2: Collect the data

Step 3: Clean the data

Step 4: Analyze the data
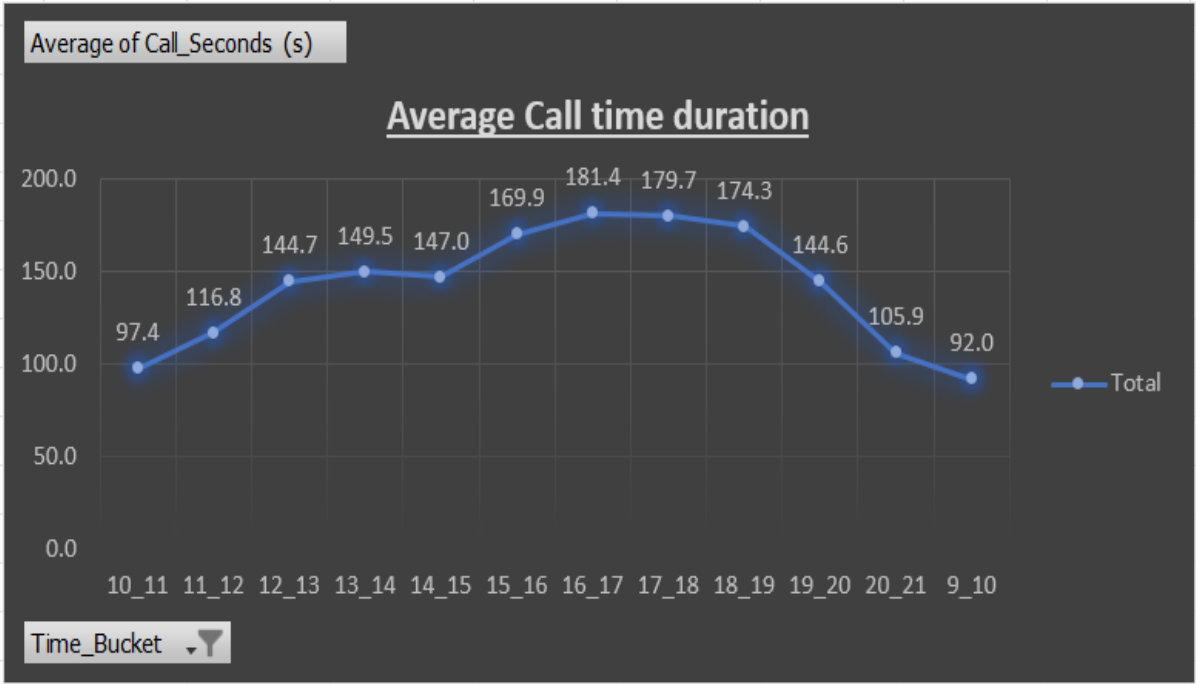
Step 5: Visualize and share your findings

INSIGHTS

Task-A:Average Call Duration

- **Description** : Determine the average duration of all incoming calls received by agents. This should be calculated for each time bucket.

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

- To implement this task I've created a pivot table that calculates the average call durations for each time bucket .

- I've also created a line chart showing that the average call duration increases between 9 to 5 then decreases.

Time_Bucket	Call_Seconds (s)		Row Labels ⬆🔽	Average of Call_Seconds (s)
9_10	96.00		10_11	97.4
9_10	140.00		11_12	116.8
9_10	85.00		12_13	144.7
9_10	91.00		13_14	149.5
9_10	165.00		14_15	147.0
9_10	0.00		15_16	169.9
9_10	85.00		16_17	181.4
9_10	0.00		17_18	179.7
9_10	65.00		18_19	174.3
9_10	180.00		19_20	144.6
9_10	108.00		20_21	105.9
9_10	186.00		9_10	92.0
9_10	0.00		**Grand Total**	**139.5**
9_10	100.00			
9_10	75.00			
9_10	0.00			
9_10	0.00			
9_10	243.00			
9_10	250.00			
9_10	208.00			

Average of Call_Seconds (s)

Average Call time duration

Time_Bucket ⬇🔽

| Task C | Task D | Cleaned data | Task B | **Task A** | + |

Task-B:Call Volume Analysis

- **Description** : 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.).

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

- To implement this task I've created a pivot table that calculated the number of calls received and its percentage for every time bucket.

- To visualise this analysis I've created a combo column chart which shows that the number of calls in a day increases from 9 to 12 and the it starts decreasing.

Time_Bucket	Call_Status		Row Labels ▽	Calls recieved	% of Call recieved
9_10	answered		10_11	13313	11.28%
9_10	answered		11_12	14626	12.40%
9_10	answered		12_13	12652	10.72%
9_10	answered		13_14	11561	9.80%
9_10	answered		14_15	10561	8.95%
9_10	abandon		15_16	9159	7.76%
9_10	answered		16_17	8788	7.45%
9_10	abandon		17_18	8534	7.23%
9_10	answered		18_19	7238	6.13%
9_10	answered		19_20	6463	5.48%
9_10	answered		20_21	5505	4.67%
9_10	answered		9_10	9588	8.13%
9_10	abandon		**Grand Total**	**117988**	**100.00%**
9_10	answered				
9_10	answered				
9_10	abandon				
9_10	abandon				

Task C Task D Cleaned data **Task B** Task A +
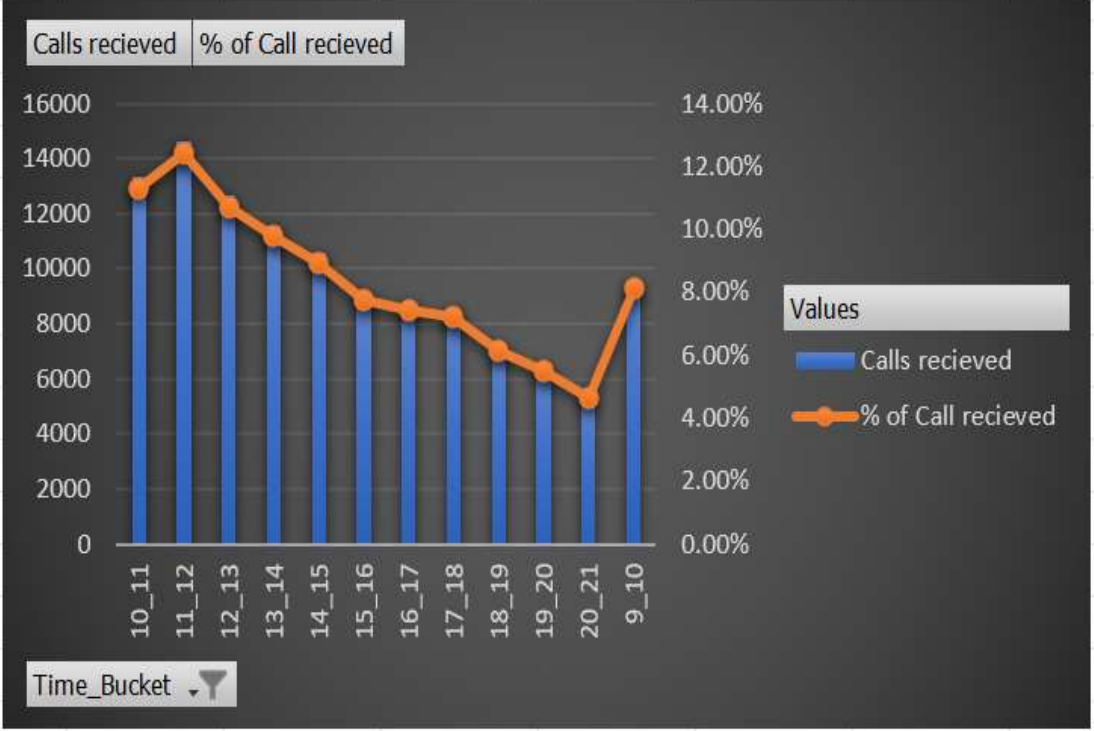
Task-C:Manpower Planning

- **Description:** 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.

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

- To implement this task I've created a pivot table that calculates the call duration for every call status for each date provided and one more pivot table to calculate the count and average call seconds.

- Then I calculated the total no. of needed hours to convert the 70% of answered calls to 90% was 179 hours and also the no. of agents working for 70% which was 40.

- After some calculation I found that 11 more workers are required and to get the no. of agents required for every time bucket I multiplied the call seconds/total call seconds with 51(total no. of agents needed to attend 90% of calls).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Count of Duration(hh:mm:ss)	Column Labels ▾					Time_Bucket	Call_Seconds (s)		Row Labels ▾	Count of Call_Seconds (s)	Average of Call_Seconds (s)	call seconds/total call seconds	Agents required
2	Row Labels ▾	abandon	answered	transfer	Grand Total		9_10	96.00		(blank)				
3	⊞ 1-Jan	684	3883	77	4644		9_10	140.00		9_10	9588	92	0.08	4
4	⊞ 2-Jan	356	2935	60	3351		9_10	85.00		20_21	5505	106	0.05	2
5	⊞ 3-Jan	599	4079	111	4789		9_10	91.00		19_20	6463	145	0.05	3
6	⊞ 4-Jan	595	4404	114	5113		9_10	165.00		18_19	7238	174	0.06	3
7	⊞ 5-Jan	536	4140	114	4790		9_10	0.00		17_18	8534	180	0.07	4
8	⊞ 6-Jan	991	3875	85	4951		9_10	85.00		16_17	8788	181	0.07	4
9	⊞ 7-Jan	1319	3587	42	4948		9_10	0.00		15_16	9159	170	0.08	4
10	⊞ 8-Jan	1103	3519	50	4672		9_10	65.00		14_15	10561	147	0.09	5
11	⊞ 9-Jan	962	2628	62	3652		9_10	180.00		13_14	11561	150	0.10	5
12	⊞ 10-Jan	1212	3699	72	4983		9_10	108.00		12_13	12652	145	0.11	5
13	⊞ 11-Jan	856	3695	86	4637		9_10	186.00		11_12	14626	117	0.12	6
14	⊞ 12-Jan	1299	3297	47	4643		9_10	0.00		10_11	13313	97	0.11	6
15	⊞ 13-Jan	738	3326	59	4123		9_10	100.00		Grand Total	117988	140	1	51
16	⊞ 14-Jan	291	2832	32	3155		9_10	75.00						
17	⊞ 15-Jan	304	2730	24	3058		9_10	0.00		x/51=9588/117988				
18	⊞ 16-Jan	1191	3910	41	5142		9_10	0.00						
19	⊞ 17-Jan	16636	5706	5	22347		9_10	243.00						
20	⊞ 18-Jan	1738	4024	12	5774		9_10	250.00						
21	⊞ 19-Jan	974	3717	12	4703		9_10	208.00						
22	⊞ 20-Jan	833	3485	4	4322		9_10	154.00						
23	⊞ 21-Jan	566	3104	5	3675		9_10	127.00						
24	⊞ 22-Jan	239	3045	7	3291		9_10	191.00						
25	⊞ 23-Jan	381	2832	12	3225		9_10	203.00						
26	Grand Total	34403	82452	1133	117988		9_10	0.00						
27	AVERAGE	1496	3585	49	5130		9_10	150.00						
28	PERCENTAGE	29%	70%	1%			9_10	253.00						
29	Total no. of working hours pe	4.5					9_10	0.00						
30	Acerage call duration	139.5					9_10	44.00						
31							9_10	87.00						
32	This is the no. of working hou	179			40	70	9_10	76.00						
33	no. of agents working for 70%	40			x	90	9_10	164.00						
34					x=51		9_10	205.00						
35					51-40=11	we need 11 more	9_10	54.00						

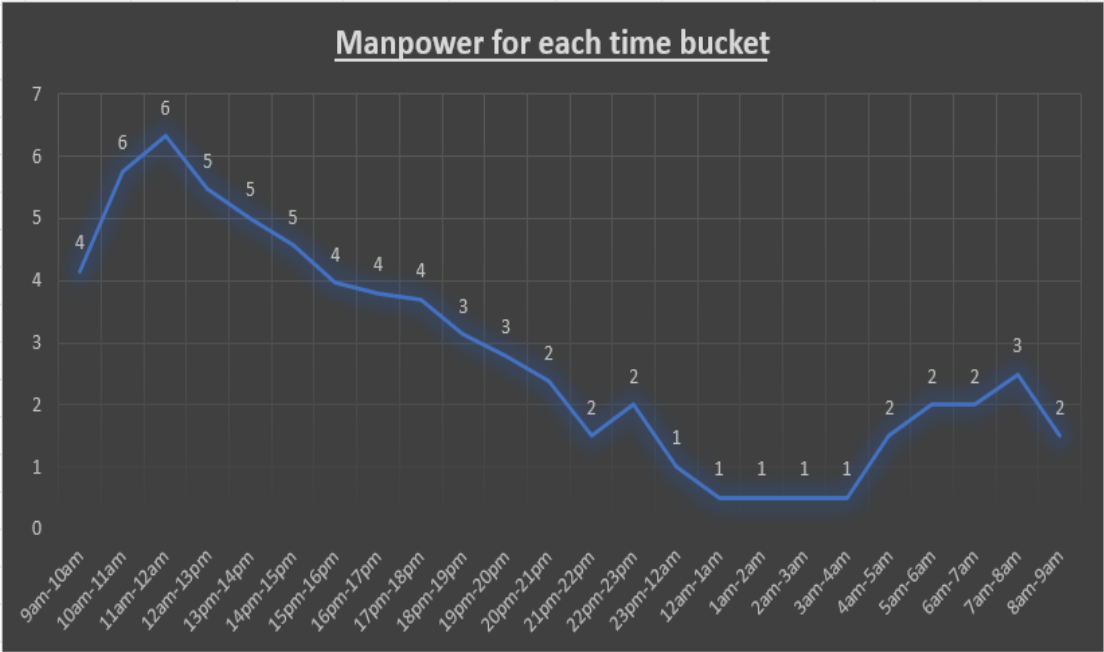# Task-D:Night Shift Manpower Planning

▪**Description:** 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. The distribution of these 30 calls is 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

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

▪ To implement this task I've created a pivot table that calculates the call duration of January for every call status.

▪Other details are in the excel sheet and I concluded that 15 agents are required to work at night shift to get 90% of call answered in a day.

Count of Duration(hh:mm:ss)	Column Labels					
Row Labels	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	1496	3585	49	5130		
PERCENTAGE	29%	70%	1%			
Total no. of working hours per	4.5					
Average call duration	139.5					

H	I	J
Let's take the average of total calls	5130	
As per the question every 100 calls in a day 30 calls come at night		
so 30% of total calls will be	1539	
to find avg hours required, avg call_sec answeres was 140, so total seconds needed to answer 1539 call will be	215460	seconds
hours	59.85	hours
to make this avg calls 90% answered multiply it by 0.9	66.5	
total working hours from 9pm to 9am	66.5	
1 agent works for 4.5 hrs		
total no. of agents required to work for 66.5 hours will be	15	
total agents required to work at night shift will be	**15 agents**	
Assumptions Given	**Details**	
Agent working days per week	6	
Agent unplanned holidays per month	4	
Agent working hours per day	9 hours	
Agent lunch and snack time per day	1.5 hours	
Agent actual working hours per day	7.5	
Agent occupied in actual working hours per day	60%	
Average agent working time per day	4.5 hours(16200 seconds)	

Row Labels	Sum of ca	Average of calls2	call/totalcall	Agents required
10pm-11pm	3	3	0.10	2
11pm-12am	2	2	0.07	2
12am-1am	2	2	0.07	1
1am-2am	1	1	0.03	1
2am-3am	1	1	0.03	1
3am-4am	1	1	0.03	1
4am-5am	1	1	0.03	1
5am-6am	3	3	0.10	2
6am-7am	4	4	0.13	2
7am-8am	4	4	0.13	2
8am-9am	5	5	0.17	3
9pm-10pm	3	3	0.10	2
Grand Total	30	2.5	1	15

Time	Agents required all day
9am-10am	4
10am-11am	6
11am-12am	6
12am-13pm	5
13pm-14pm	5
14pm-15pm	5
15pm-16pm	4
16pm-17pm	4
17pm-18pm	4
18pm-19pm	3
19pm-20pm	3
20pm-21pm	2
21pm-22pm	2
22pm-23pm	2
23pm-12am	1
12am-1am	1
1am-2am	1
2am-3am	1
3am-4am	1
4am-5am	2
5am-6am	2
6am-7am	2
7am-8am	3
8am-9am	2

Manpower for each time bucket

Results:

- I've learned the extensive use of pivot tables with filters.

- Learnt forecasting and problem solving skills.

- Learnt some insights about the call management in a company.

THANKYOU

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