



TRAINITY

PROJECT

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ABC CALL VOLUME TREND ANALYSIS.....

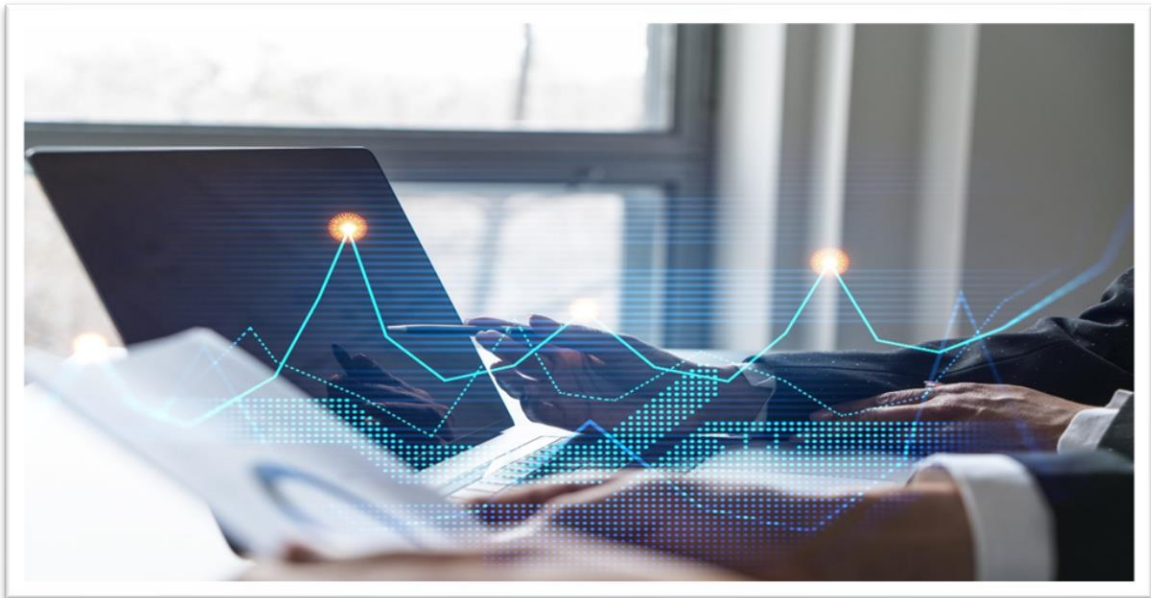


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PROJECT DESCRIPTION

ABC is a Call centre 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. I have been provided with the data of ABC call centre for the last 23 days and I should analyze the data and help the company answer some of the business questions.



TECH-STACK USED

For this project I used Microsoft Excel to run my queries. Microsoft Excel is a spreadsheet developed by Microsoft for Windows, macOS, Android and iOS.

It features calculation or computation capabilities, graphing tools, pivot tables, and a macro programming language called Visual Basic for Applications (VBA). Excel forms part of the Microsoft Office suite of software.

I used the Excel sheet provided and ran multiple functions to get the desired answers.

This project helped me in understanding the Excel Table at a much detailed manner and helped to improve my strength in extracting data from tables and visualize it in the forms of different graphs.

APPROACH

- **Understanding & Planning:** Understanding the data and planning which column's need to be cleaned & what kind of analysis can be drawn from which column.
- **Data Cleaning:** Handling Null/Abnormal values, removing unnecessary features.
- **Insights:** Draw insights by Analysing the data which could provide data driven understanding on the business and the processes.
- **Visualization:** Visualize the insights and findings to better understand the data, analysis and the story behind it.
- **Conclusion:** Summarizing the results and the key findings from our Analysis.



INSIGHTS

- The customers call at least in the evening. So the company can reduce the number of agents at that time.
- The company can hire 14 agents for the night shift.
- The company can shift some agents from day to night.
- The employees who are working 9 am to 9 pm. The manager can change the shift from 5 am to 2 pm and from 2 pm to 11pm. This way most of the calls can be answered.
- The company can divide employees into 3 parts, so agents are always available.

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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.

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

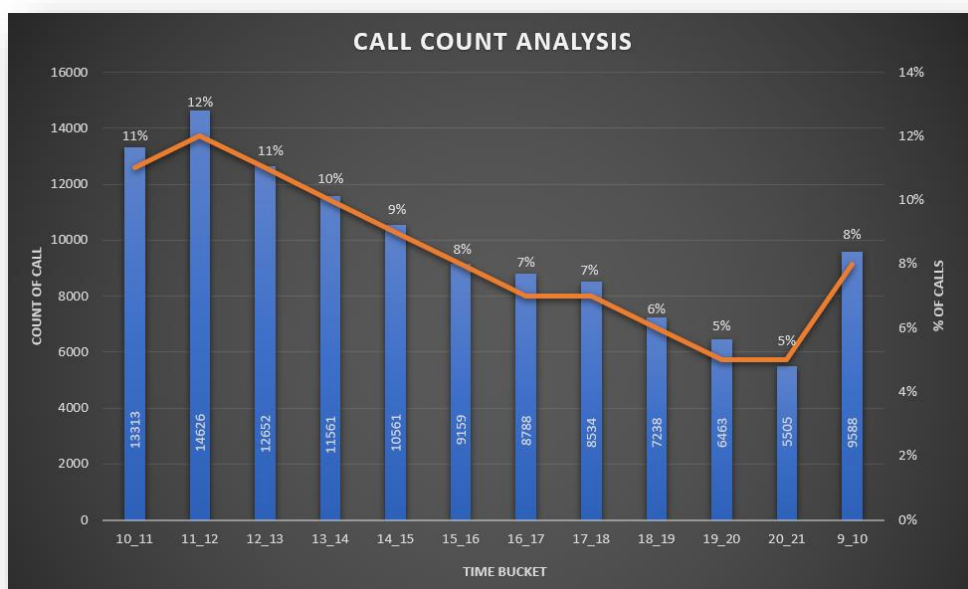
Call_Status	answered
Row Labels	Average of Call_Seconds (s)
10_11	203
11_12	199
12_13	193
13_14	195
14_15	194
15_16	199
16_17	201
17_18	200
18_19	203
19_20	203
20_21	203
9_10	199
Grand Total	199

We have calculated the average of call duration only for answered calls as there is no point in taking the rejected calls which will unnecessarily increase the denominator and thus decrease the average call time. the call duration is more or less same for all the time buckets.

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?

Time Bucke	Count of Customer_Phone_No	Count of Call_Seconds (s)
10_11	13313	11%
11_12	14626	12%
12_13	12652	11%
13_14	11561	10%
14_15	10561	9%
15_16	9159	8%
16_17	8788	7%
17_18	8534	7%
18_19	7238	6%
19_20	6463	5%
20_21	5505	5%
9_10	9588	8%



We can see from the graph that the number of calls received by the company increased during the peak time which is between 9 am to 1 pm but then as the day passed the calls reduced and by the end of the day the it were only about 5 % of total calls.

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%?

total working hours	9
hours spent on lunch and snacks	1.5
total actual working hours	7.5
hours actually worked by each employee	60% of total actual working hours
actual time spent on calls with customers	4.5
time in seconds	16200
average time per call	199
Call Capacity of an Agent per day :	81
Call Capacity of an Agent per hour :	18

Firstly I have calculated the call capacity of an agent per day and per hour so that I can find the number of agents that are currently given. The above assumption about the time spent in lunch and snacks and actual working hours were provided to us by trainity.

Count of Call_S: Column Labels			
Row Labels	abandon	answered	Grand Total
10_11	6911	6368	13279
11_12	6028	8560	14588
12_13	3073	9432	12505
13_14	2617	8829	11446
14_15	2475	7974	10449
15_16	1214	7760	8974
16_17	747	7852	8599
17_18	783	7601	8384
18_19	933	6200	7133
19_20	1848	4578	6426
20_21	2625	2870	5495
9_10	5149	4428	9577
Grand Total	34403	82452	116855

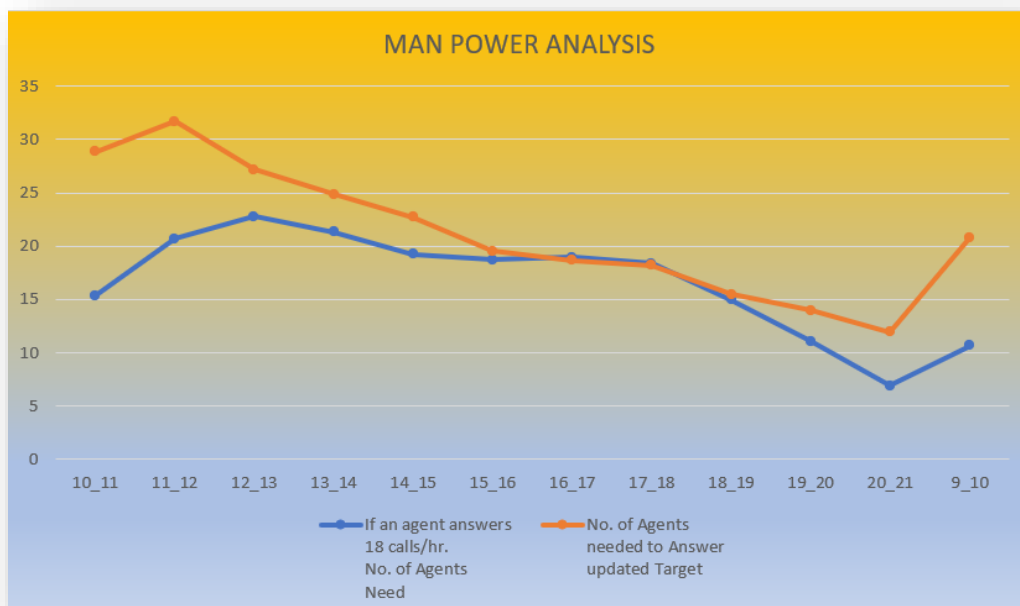
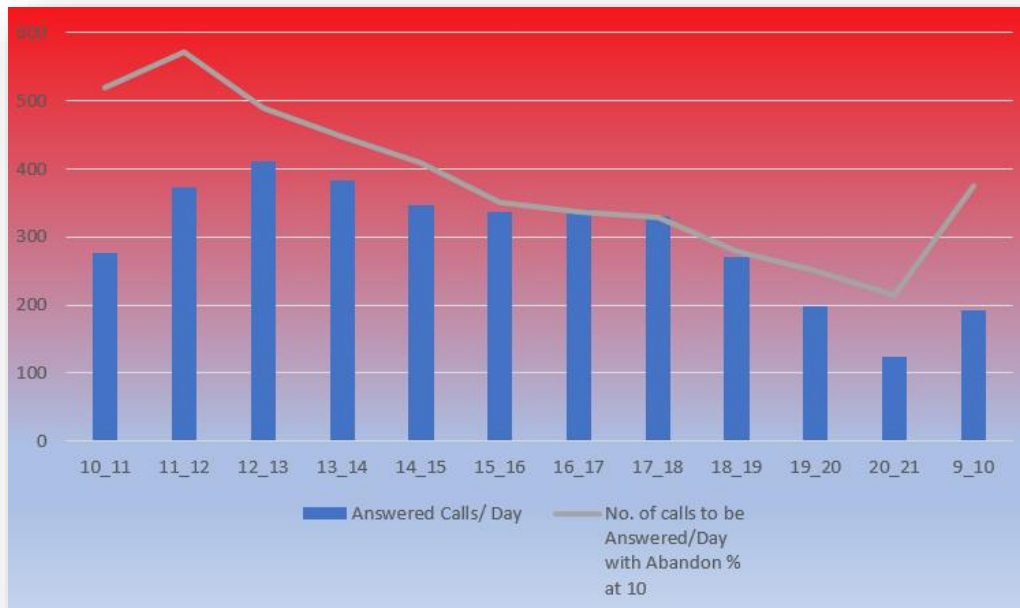
Then I calculated the number of abandoned calls and answered calls so that I can analyze the abandoned calls and make the percentage of abandoned calls to 10 %.

Time Bucket	Abandon Calls in 23 Days	Answered Calls in 23 Days	Total Calls in 23 Days	Abandon Calls per Day	Answered Calls per Day	Total Calls per Day	Abandon Percentage	No. of calls to be answered per day with Abandon % at 10
10_11	6911	6368	13279	300	277	577	52%	520
11_12	6028	8560	14588	262	372	634	41%	571
12_13	3073	9432	12505	134	410	544	25%	489
13_14	2617	8829	11446	114	384	498	23%	448
14_15	2475	7974	10449	108	347	454	24%	409
15_16	1214	7760	8974	53	337	390	14%	351
16_17	747	7852	8599	32	341	374	9%	336
17_18	783	7601	8384	34	330	365	9%	328
18_19	933	6200	7133	41	270	310	13%	279
19_20	1848	4578	6426	80	199	279	29%	251
20_21	2625	2870	5495	114	125	239	48%	215
9_10	5149	4428	9577	224	193	416	54%	375
Grand Total	34403	82452	116855	1496	3585	5081	29%	4573

Then I calculated the abandoned calls per day and answered calls per day and calculated the abandoned call percentage which came around 30%. Then I calculated the number of calls to be answered per day so that abandoned call % is around 10%. I divided the calls by 23 to get per day as there were 23 days data.

Time_Bucket	Answered Calls/ Day	If an agent answers 18 calls/hr. No. of Agents Need	No. of calls to be Answered/Day with Abandon % at 10	No. of Agents needed to Answer updated Target
10_11	277		15	29
11_12	372		21	32
12_13	410		23	27
13_14	384		21	25
14_15	347		19	23
15_16	337		19	20
16_17	341		19	19
17_18	330		18	18
18_19	270		15	16
19_20	199		11	14
20_21	125		7	12
9_10	193		11	21

Then taking the answered call per day to be 18 as calculated above I found out the number of agents that are currently there and the number of agents required to make the abandoned call percentage to 10. Then I made the below graphs that shows the currently answered calls per day and the number of calls to be answered per day to reduce the abandoned % to 10.



This is the man power analysis that shows the man currently employed and those required to be employed. We found that especially during peak time which is around 9am to 2 pm the number of agents required are substantially high as compared to currently employed workforce. The management needs to urgently employee more workforce as the current abandoned rate of calls is around 30% which is very high and in some time slots its up to 50%.

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. The distribution of these 30 calls is as follows:

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

No. of calls to be Answered/Day with Abandon %	
Time_Bucket	at 10
10_11	520
11_12	571
12_13	489
13_14	448
14_15	409
15_16	351
16_17	336
17_18	328
18_19	279
19_20	251
20_21	215
9_10	375
Total calls in a day	4573
Call at night	1372

TIME SLOT	Distribution		Distribution of		No. of employees needed
	of 30 calls	Percentage Distribution	total calls		
10pm-11pm	3	10%	137		8
11pm-12am	2	7%	91		5
12am-01am	2	7%	91		5
01am-02am	1	3%	46		3
02am-03am	1	3%	46		3
03am-04am	1	3%	46		3
04am-05am	1	3%	46		3
05am-06am	3	10%	137		8
06am-07am	4	13%	183		10
07am-08am	4	13%	183		10
08am-09am	5	17%	229		13
9pm-10pm	3	10%	137		8
	30	1	1372		

In this I calculated the estimated calls in each time bucket that the company can receive during the night. I simply calculated the calls prorated basis based on the estimation provided to me. This way I calculated the agents that the company is required during the night to answer the calls.



We can see in the graph that the agents required is higher till 12 midnight and after 6 am in the morning.



THANK YOU



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