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PROJECT-8

ABC CALL VOLUME TREND ANALYSIS

Project Description:

The project is about analyzing the inbound calls received by a customer experience team of ABC insurance company. The dataset includes the details of the agents, queue time, time of call, duration of the call, and call status. The objectives of the project are to calculate the average call time duration for all incoming calls received by agents in each time bucket, show the total volume/number of calls coming in via charts/graphs, propose a manpower plan required during each time bucket to reduce the abandon rate to 10%, and propose a manpower plan required during each time bucket in a day to attend to the calls received in the night.

Approach:

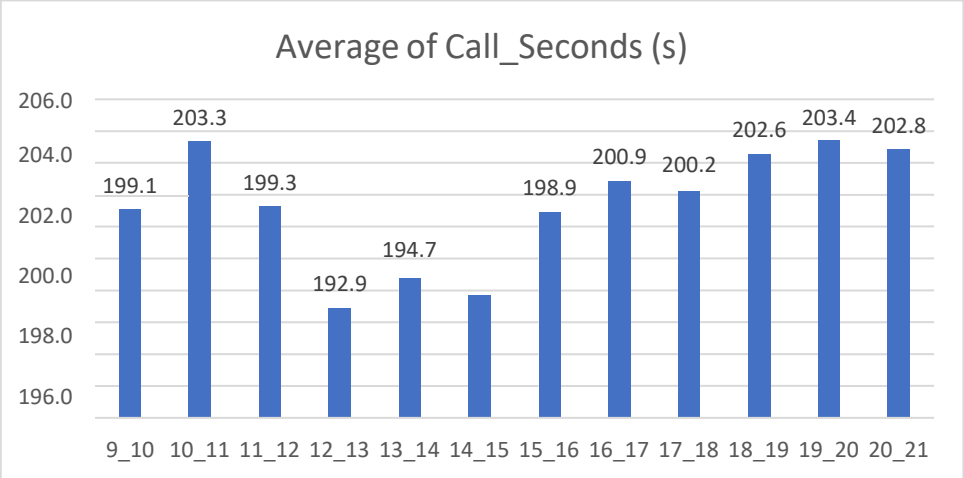
The approach involves downloading the dataset and analyzing it using Excel. The average call time duration for all incoming calls received by agents in each time bucket is calculated using pivot tables. The total volume/number of calls coming in is shown via charts/graphs. The manpower plan required during each time bucket to reduce the abandon rate to 10% is proposed using Erlang C formula. The manpower plan required during each time bucket in a day to attend to the calls received in the night is also proposed using Erlang C formula.

Tech-Stack Used:

The project is executed using Excel.

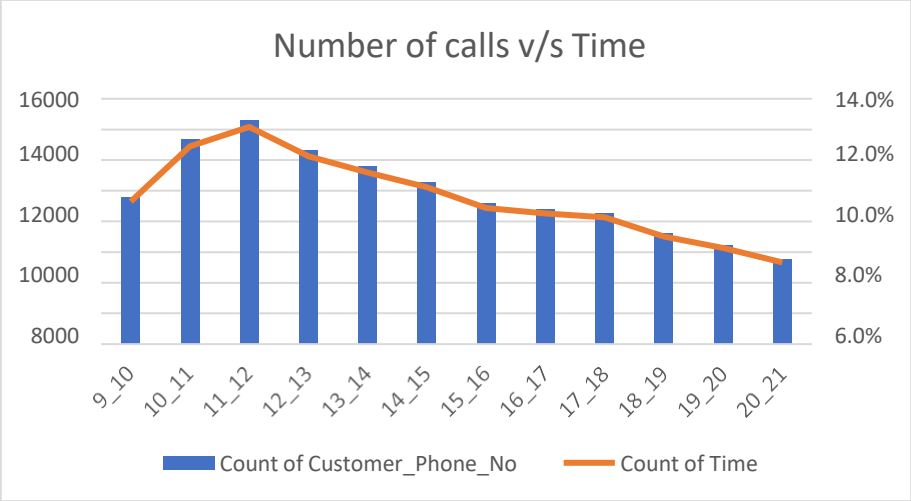
Insights:

a. Calculate the average call time duration for all incoming calls received by agents (in each Time_Bucket).



- Pivot Table is used to answer this question.
- Time_Bucket is measured in the Rows and average of Call_Seconds is measured in theValues section. And we put Call_Status in the Filters section.
- The total average of call time duration which are answered by the agents is 198.6 seconds.
- The average call time duration for all incoming calls received by agents is the highest inbetween 10 am to 11 am and from 7 pm to 8 pm
- The average call time duration for all incoming calls received by agents is the least inbetween 12 noon to 1 pm.

b. Show the total volume/ number of calls coming in via charts/ graphs [Number of calls v/s Time]. You can select time in a bucket form (i.e. 1-2, 2-3, …..)



- We plotted Time_Bucket in the rows and took Count of Customer_Phone_No and Count ofTime in the Values section.
- We measured Count of Time as the percentage of Column Total.
- The customers call the most in between 11 am to 12 noon.
- The customers call the least in between 8 pm to 9 pm.

- **Assumption:** An agent work for 6 days a week; On an average total unplanned leaves per agent is 4 days a month; An agent total working hrs is 9 Hrs out of which 1.5 Hrs goes intolunch and snacks in the office. On average an agent occupied for 60% of his total actual working Hrs (i.e. 60% of 7.5 Hrs) on call with customers/ users. Total days in a month is 30days.

Agents working hour	9
Agents on-floor work hour	7.5
Working Days	6
Out of 28 days, an agent works	24
Unplanned leave days	4
Work days per month	20
Days an agent work in a week	5
Actual working hours	60%
Total time spent on call	4.5

  - ***Note**: For easy calculation, we assumed there are 28 days in a month.*

c. As we can see current abandon rate is approximately 30%.

Propose a manpower plan required during each time bucket [between 9am to 9pm] to reduce the abandon rate to 10%. (i.e. We have to calculate minimum number of agents required in each time bucketso that at least 90 calls should be answered out of 100.)

Time taken on an average to answer a call	198.6 seconds	Time Bucket	Count of Time	Reqd. Agents
		9_10	8.1%	5
Time requirement to answer 90% of the calls (hrs	254.7001826	10_11	11.3%	6
		11_12	12.4%	7
Total working person required per day	57	12_13	10.7%	6
		13_14	9.8%	6
		14_15	9.0%	5
Call volume daily (9 AM - 9pm)	5130	15_16	7.8%	4
If we provide support in night, (9 PM - 9 AM)	1539	16_17	7.4%	4
		17_18	7.2%	4
Additional hours required	76.41135	18_19	6.1%	3
		19_20	5.5%	3
Additional HC	17	20_21	4.7%	3
		Grand Total	100.0%	57
Total HC	74			

- First, we created pivot table. Date & Time is dragged down to Rows, Call Status to Columns,while taking count Call Duration in the Values section.
- Then, we calculated the average of abandon, answered and transfer by using the averageexcel formula.
- 29% of the calls are abandoned, 1% is transferred, while 70% of the calls are answered in theday time.
- Total agents required to answer the 90% of the calls per day is 57.
- The minimum number of agents required for each time bucket is calculated by 57 * count oftime (calculated in the 2nd question).

d. Let's say customers also call this ABC insurance company in night

but didn't get answer asthere are no agents to answer, this creates a bad customer experience for this Insurance company. Suppose every 100 calls that customer made during 9 Am to 9 Pm, customer also made 30 calls in night between interval [9 Pm to 9 Am] and distribution of those 30 calls are 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

Now propose a manpower plan required during each time bucket in a day. MaximumAbandon rate assumption would be same 10%.

- We first calculated the Time Distribution by dividing each calls distribution by total calls i.e.30.
- The number of agents required for each time bucket is calculated by 17 * Time Distribution.

- **Note:** 17 is calculated above by dividing the additional hours required to answer the nightcalls by 4.5 (actual working hours of agents).

Nights Call (9 pm - 9 am)	Calls Distribution	Time Distribution	Agents Required
21_22	3	10%	2
22_23	3	10%	2
23_24	2	7%	1
00_01	2	7%	1
01_02	1	3%	1
2_3	1	3%	1
3_4	1	3%	1
4_5	1	3%	1
5_6	3	10%	2
6_7	4	13%	2
7_8	4	13%	2
8_9	5	17%	3
	30		17

Results of Insights

- The customers call the least in the evening. So, the company can reduce the number ofagents at that time for answering the calls.
- The company can hire 17 customer support agents for the night shift work.
- The company can shift some of the day workers for the night shift.
- The employees who are working 9 am to 9 pm. The manager can change some of the workers shift from 5 am to 2 pm and some workers from 2 pm to 11 pm to get the most callsanswered.
- The company can make the employers divide into 3 parts too, so that the agents are alwaysavailable 24/7.
- We found there were few outliers in the data. And if we have removed that outliers, thenthe answers would have been different.

Result:

- I learned how an analyst can make an impact in customer service department.
- I learned how a company deals with the customers to give them the most satisfaction.
- I got to know about the IVR Duration, which is an AI tool, who answer the calls to get toknow the customer exact question and then transfer it to the right agent to get the customer's queries get answered.
- This project was easy to get the answers as the data provided by the team have already calculated the time bucket and converted the calls duration into seconds, so we do not hadto spend time on it to calculate.
- I learned about the behavioural analytics.