ABC Call Volume Trend Analysis

Project Description:

This project is about an ABC company call analysis, in this customer data is given, how many customers call per day and at what time interval, the call is attended by an agent or not answered, or the call is forwarded. At what time the customer called, what was the duration of the call and various other factors are given from which insights were found to make the company more profitable and give customer efficiency by adding more agents where required so most of the calls are answered.

Approach:

I have first downloaded the data given and used that in excel

Then I checked the data provided, what are the various columns and how that will help me in my analysis.

Then I checked if the data contains any duplicate value, but data provided was clean.

Then I applied pivot table to various columns to find the answer for given questions.

Tech-Stack Used:

I have used my excel to complete this project as it provied various functions, tables and charts such as pivot table.

Insights:

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

   Here I have used pivot table on the time bucket and average call which seprated the date in time buckets which was answered by the agent.
   From the output below we can say that the average call time duration for all time buckets is around **198.6 Seconds**. i.e. **3 Mins & 31 Seconds.**

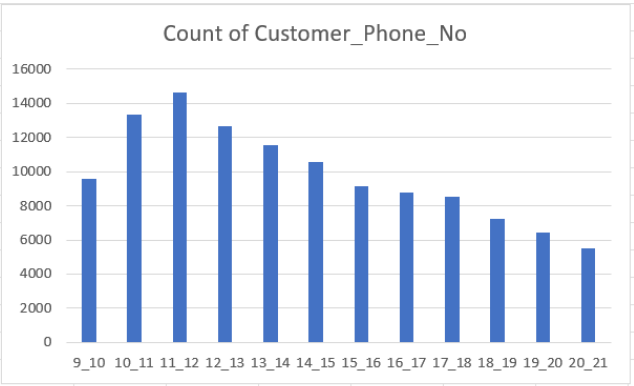
Call_Status	answered
Row Labels	**Average of Call_Seconds (s)**
10_11	203.3
11_12	199.3
12_13	192.9
13_14	194.7
14_15	193.7
15_16	198.9
16_17	200.9
17_18	200.2
18_19	202.6
19_20	203.4
20_21	202.8
9_10	199.1
Grand Total	**198.6**

2. 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, …..)
   ANS:

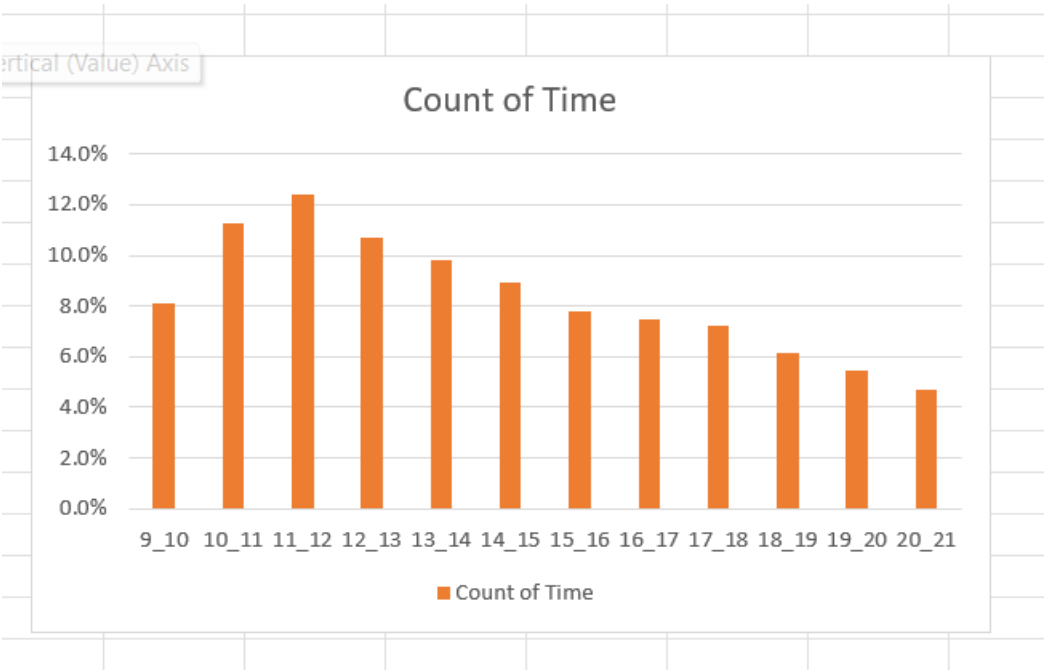
   In this I took the time interval and by using pivot table I got the count of time for each time interval then I plotted a histogram which show number of call v/s time that is how many calls were made within a particular time interval.

   From the charts we observe that the peak time for calls is from 10am till 3pm. The least number of calls were made during 8pm to 9pm.

Row Labels	Count of Customer_Phone_No	Count of Time
9_10	9588	8.1%
10_11	13313	11.3%
11_12	14626	12.4%
12_13	12652	10.7%
13_14	11561	9.8%
14_15	10561	9.0%
15_16	9159	7.8%
16_17	8788	7.4%
17_18	8534	7.2%
18_19	7238	6.1%
19_20	6463	5.5%
20_21	5505	4.7%
Grand Total	117988	100.0%



A graph of percentages also has been plotted.



3. As you 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. You have to calculate minimum number of agents required in each time bucket so that at least 90 calls should be answered out of 100.)
   ANS:

   According to the table below we can see that **29%** of calls are abandon, while **70%** of them are answered and **1%** of them are transferred.

   Now from the first question we have that on an average a call lasts for 198.6 secs or 3.31mins.

   Total number of calls made on an average in a day is 5130.
   So the time required to answer 90% of the calls is 254.70 Hrs.

   Now as per the given condition, about an agent, we see that he can only attend 4.5hrs of calls in his day shift. Rest time is for relaxing or having meals.
   So the **number of agents required are: 254.70/4.5 = 57 agents.**

So, considering 90% of the calls to be answered or assuming 10% abandon rate we will require **57 agents.**

Row Labels	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
	1496	3585	49	5130
	29%	70%	1%	
time taken on an avg to answer a call	198.6 secs			
time required to answer 90% of the calls	254.7001826			
total working person required per day	57			

4. Let's say customers also call this ABC insurance company in night but didn't get answer as there 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:
   Now propose a manpower plan required during each time bucket in a day. Maximum Abandon rate assumption would be same 10%.
   ANS:

   Now from 9am to 9pm on an average 5130 calls are made.
   So 30% of that are made at night.

From 9pm to 9am average calls made will be **1539**.

Now if we calculate additional hours it would be **76.41hrs**
Additional agents required will be 17.
So the total head of agents that the company must hire becomes **74.**

time taken on an avg to answer a call	198.6 secs	
time required to answer 90% of the calls	254.7001826	
total working person required per day	57	
call volume daily from 9am to 9pm	5130	calls
now for 9pm to 9am (30%)	1539	calls
additional hours required	76.41	
additional people required	17	
Total headCount	74	

Requirement of agents at specific time buckets are shown below in the table.

Distribution of the man power at night			total hours we need	
		time distribution	76.41	Requirement
21-22	3	10%	7.64114	13
22-23	3	10%	7.64114	13
23-24	2	7%	5.09409	8
00_01	2	7%	5.09409	8
01_02	1	3%	2.54705	4
02_03	1	3%	2.54705	4
03_04	1	3%	2.54705	4
04_05	1	3%	2.54705	4
05_06	3	10%	7.64114	13
06_07	4	13%	10.1882	17
07_08	4	13%	10.1882	17
08_09	5	17%	12.7352	21
	30			

More over as we can see, from 11PM to 5AM the number of calls is way less than rest. So, this is a great time for company to give meals break to its agents.

Result:

In this project, I learned how helpful pivot table is to segregate data according to your need and how by using some strategies you can make a company profitable. How important data is for a company how it helps to knows various things about the company as well as the customer.

How statistics and excel help us to draw insights from data.