ABC Call Volume Trend Analysis

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Project Overview

A dataset about inbound calls to an ABC insurance firm makes up this project. We'll be analysing this to determine the answers to our numerous inquiries, such as how many agents are taking calls at a given moment.

Period, methods for lowering call abandonment rates, etc.

Approach

In order to extract the most insightful conclusions from the problem statement, we first tried to grasp it and then work in the best way possible. In specifically, I used an observational method in the first stage to make an educated judgement about the pattern the dataset will follow, and then I used conceptual processes to arrive at the final result.

Tech Stack Used

The following list includes the software(s) used in this project: -

- Microsoft Excel (version 2019)
- Microsoft Word (version 2019)

Outcomes

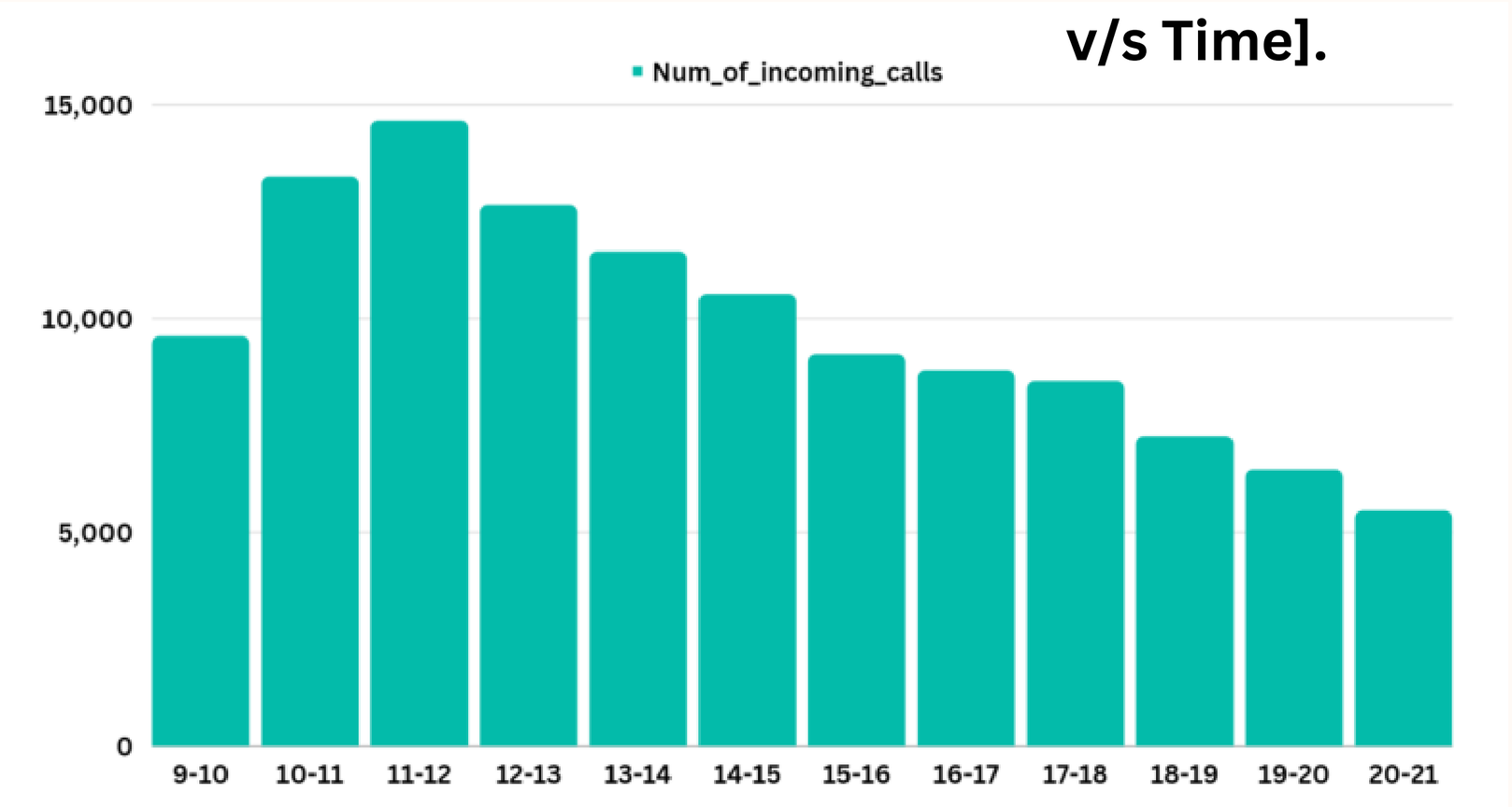
Let's move on to the project's actual cases and problem statements to see what insights we can offer there:

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

	A	B	C	D
1	*Time_Bucket*	*Duration(hh:mm:ss)*	*Call_Status (answered)*	AVERAGE_CALL_TIME_DURATIO
2	10_11 Total			0:03:2
3	11_12 Total			0:03:1
4	12_13 Total			0:03:1
5	13_14 Total			0:03:1
6	14_15 Total			0:03:1
7	15_16 Total			0:03:1
8	16_17 Total			0:03:2
9	17_18 Total			0:03:2
10	18_19 Total			0:03:2
11	19_20 Total			0:03:2
12	20_21 Total			0:03:2
13	9_10 Total			0:03:1

Now, we can see that all of the average call durations have been organised according to the time period in which they happened. Google Sheets' pivot tables were used for this. One thing to note is that almost all of the time buckets' average call durations are equal, which may indicate that this is the average amount of time the agents spend answering customers' questions.

2. Show the total volume/ number of calls coming in via charts/ graphs [Number of calls v/s Time].



We can deduce from the preceding graph that the peak call volume occurred between 11 and 12 am and the peak call volume occurred between 9 and 10 pm.

3. As you can see current abandon rate is approximately 30%. Propose a manpower plan required during each time bucket [between 9 am to 9 pm] to reduce the abandon rate to 10%.

	A	B	C	D	E	F	G
1	*Time_Bucket*	*Agent_ID*	*Date_&_Time (01/01/2022)*	*Ringing*	Current_Num_of_agents	Num_of_incoming_calls	Expected_num_of_agents
2	10_11 Total				312	552	496.8
3	11_12 Total				416	487	438.3
4	12_13 Total				460	469	422.1
5	13_14 Total				369	373	335.7
6	14_15 Total				430	433	389.7
7	15_16 Total				367	367	330.3
8	16_17 Total				329	331	297.9
9	17_18 Total				372	372	334.8
10	18_19 Total				311	337	303.3
11	19_20 Total				225	235	211.5
12	20_21 Total				139	329	296.1
13	9_10 Total				230	359	323.1

In the above pivot table, drawn insights show the total number of incoming calls during a particular time bucket and also the number of agents currently working in that time bucket. So, below we have drawn a final result table to decrease the abandon rate to 10% by taking the difference between the expected number of agents(90% of the number of incoming calls) and the current number of agents in that time period:

Time Bucket	Number of agents required
9-10	93
10-11	185
11-12	22
12-13	-38
13-14	-33
14-15	-40
15-16	-37
16-17	-31
17-18	-37
18-19	-8
19-20	-13
20-21	157

The time buckets from 12 to 13 pm to 7 to 8 pm are where we can notice negative numbers in the given table. As a result of these findings, it can be concluded that the distribution of manpower needs to be reconsidered in accordance with the requirement. This negative value denotes an excess of agents relative to the requirement, even though at some points the required value is extremely high, such as 185 or 157.

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:

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 suggest the personnel schedule needed for each block of time in a day. The assumption for the maximum abandonment rate would be 10%.

Insights

In the table below, we've broken down each time bucket for the 12-hour nighttime slot and noted the percentage of incoming calls that we determine using the provided distribution. Using this information, we were able to determine the actual number of incoming calls in each time period and, ultimately, calculate the real-time manpower plan by taking into account a 10% abandon rate in each time bucket.

Time bucket (night)	Percentage_incoming_calls(on 30 calls)	Num_of_incoming_calls(night)	Manpower needed in each time bucket
21-22	10	139.32	125.388
22-23	10	139.32	125.388
23-24	6.666666667	92.88	83.592
12-1	6.666666667	92.88	83.592
1-2	3.333333333	46.44	41.796
2-3	3.333333333	46.44	41.796
3-4	3.333333333	46.44	41.796
4-5	3.333333333	46.44	41.796
5-6	10	139.32	125.388
6-7	13.33333333	185.76	167.184
7-8	13.33333333	185.76	167.184
8-9	16.66666667	232.2	208.98

Results

We have now completed our project report, and all of the insights are provided along with the problem statement. Through this analysis, we have come to the conclusion that data analytics is helpful in many real-life scenarios, including this one, and that it enables us to identify quick fixes for a variety of business-related and social issues.

The URL to my workbook, on which I conducted my analysis, is provided below:

google-sheet link

Thank
you