Drive Link for the project-
https://drive.google.com/drive/u/0/folders/16Ck7RG-0EnRcB5yt7ieaIgfxhqCWuWEr

Presentation Link for the project-

https://www.loom.com/share/abe192eee0214ed6bae6444ae06a64e6

Project by –

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Call Volume Trend Analysis

Project Description

This project will go through to do analysis on Number of Calls coming in the ABC Company of Insurance Category.

A customer experience (CX) team consists of professionals who analyze customer feedback and data, and share insights with the rest of the organization. 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.

Inbound customer support is defined as the call centre which is responsible for handling inbound calls of customers. Inbound calls are the incoming voice calls of the existing customers or prospective customers for your business which are attended by customer care representatives. Inbound customer service is the methodology of attracting, engaging, and delighting your customers to turn them into your business' loyal advocates. By solving your customers' problems and helping them achieve success using your product or service, you can delight your customers and turn them into a growth engine for your business.

Project Approach

In order to find the insights, Excel is used. Using Excel, we performed Data Cleaning and transformation like understanding data columns, checking for missing data, checking and removing outliers, etc. After that, we did an Exploratory analysis to find the insights and to answer the questions given by the client.

Tech Stack Used

Microsoft Excel 2021, Microsoft Word 2021, and Google Drive.

Project Dataset

We are provided with a dataset of a Customer Experience (CX) Inbound calling team for 23 days.

Data includes **Agent_Name, Agent_ID, Queue_Time** [duration for which customer have to wait before they get connected to an agent], **Time** [time at which call was made by customer in a day], **Time_Bucket** [for easiness we have also provided you with the time bucket], **Duration** [duration for which a customer and executives are on call, **Call_Seconds** [for simplicity we have also converted those time into seconds], **call status** (Abandon, answered, transferred).

Project Analysis & Insights

Cleaning the data

At first, we found out the number of blank cells in the particular column. After that, we find the percentage of the null values.

To find the blank values we used COUNTBLANK function in Excel.

After using the formula, we found the data to be mostly in good shape.

Next, we move on to remove all the duplicate values in the dataset. Here, is the excel result for that- "No duplicate values found".
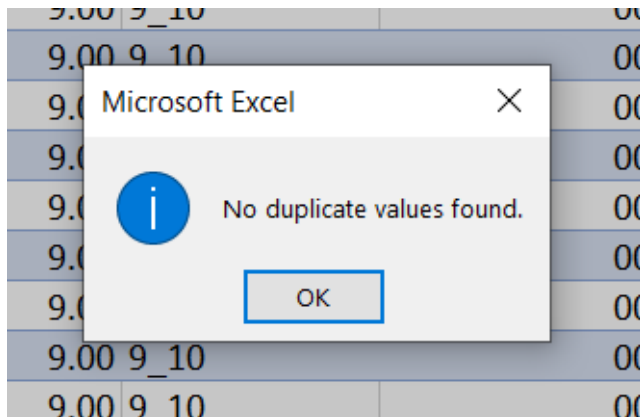
Insight 1- Calculate the average call time duration for all incoming calls received by agents (in each Time_Bucket).

Using Pivot Tables, I measured Time_Bucket in the Rows and average of Call_Seconds is measured in the Values section. We also put Call_Status in the Filters section.

Result-
Average of call duration which are received by the agents is 197.710 seconds.

The average call duration for all calls received by agents is the highest in between 10 -11 am and from 7-8 pm.

The average call duration for all calls received by agents is the lowest in between 12-1 pm.

Time Bucket	Average Call Seconds
10_11	209.146
11_12	203.352
12_13	190.758
13_14	193.600
14_15	193.197
15_16	195.486
16_17	196.543
17_18	198.713
18_19	201.093
19_20	203.939
20_21	202.554
9_10	199.006
Grand Total	**197.710**

Wrapped _By

Average Call Duration (in Seconds)
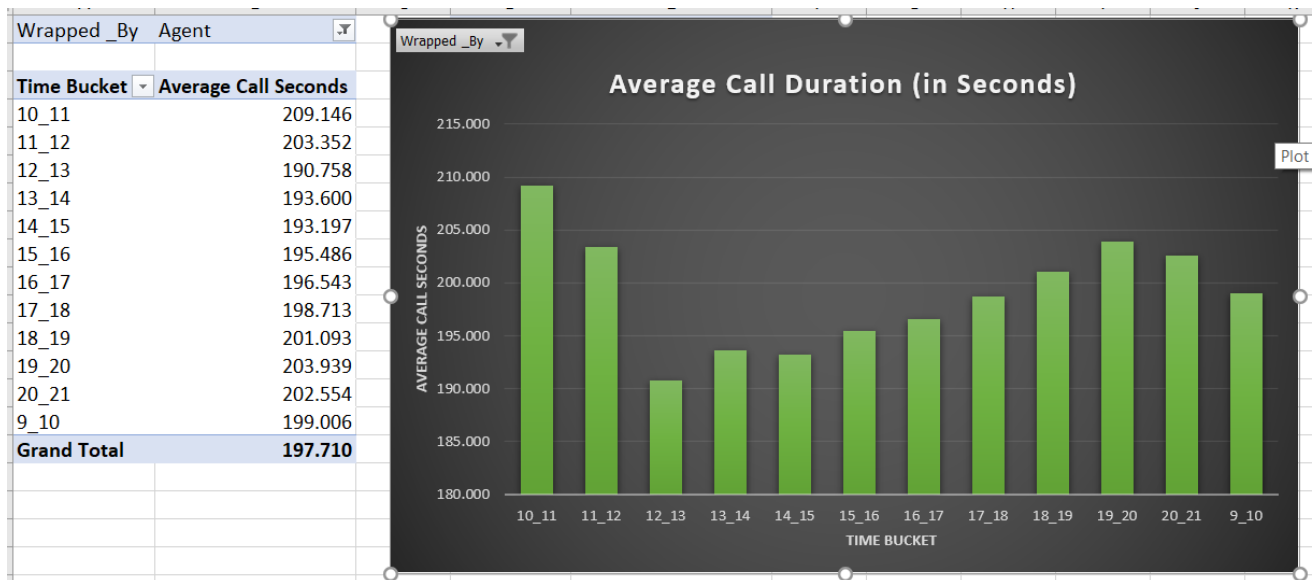
Insight 2-

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, ….)
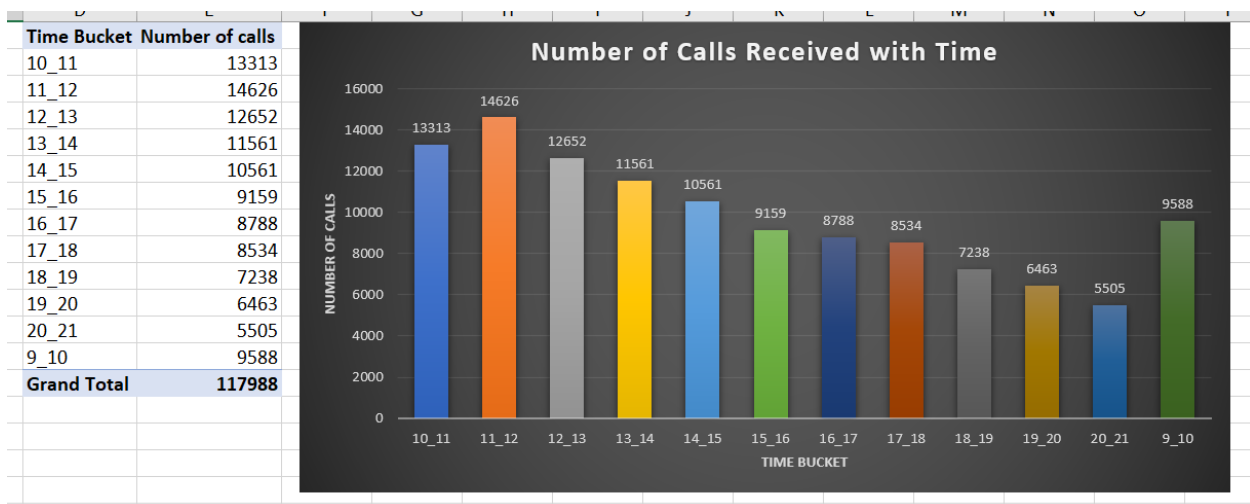
We used pivot table to plot the graph. For this, we put time bucket in rows and number of calls in values section.

Result-

Total Number of Call received – 117988

Highest Number of Calls received at time was 11-12 am which is 14626.

Lowest Number of calls received at time was 8-9 pm which is 5505.

Time Bucket	Number of calls
10_11	13313
11_12	14626
12_13	12652
13_14	11561
14_15	10561
15_16	9159
16_17	8788
17_18	8534
18_19	7238
19_20	6463
20_21	5505
9_10	9588
Grand Total	**117988**

Number of Calls Received with Time

Insight 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.)

First, we created pivot table by putting Date & Time in rows, Call Status to Columns, and count of Call Duration in the Values section.

Then, we calculated the average of abandon, answered and transfer by using the average excel formula.

Date	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
Grand Total	34403	82452	1133	117988
Average	1496	3585	49	5130
%age of Total	29%	70%	1%	

Then keeping the assumptions that were given by the client, we went on to get more insight to find the number of Agents needed to reduce the abandon rate to 10%.

Assumptions:		
Agents working Hrs	9	hrs
Break	1.5	hrs
Agents working Hrs left after break	7.5	hrs
Agents Time spent on calls	**4.5**	**hrs**

(Note- 60% of Agent Working hrs left)

Avg number of calls per day(9:00 AM to 9:00 PM)	5130	Nos
Average call duration (9:00 AM to 9:00 PM)	199	seconds
Total call duration for 90% Calls (in seconds)	918531	seconds
Total call duration for 90% Calls (in hrs)	255	hrs
Agents required per day	**57**	

Agents required per day = Total call duration / Agents time spent on calls

Time Bucket	Number of calls	% of calls received	Number of agents needed
10_11	13313	11%	6
11_12	14626	12%	7
12_13	12652	11%	6
13_14	11561	10%	6
14_15	10561	9%	5
15_16	9159	8%	4
16_17	8788	7%	4
17_18	8534	7%	4
18_19	7238	6%	3
19_20	6463	5%	3
20_21	5505	5%	3
9_10	9588	8%	5
Grand Total	**117988**	**100%**	**57**

Result-

After finding the insights we found that total 57 agents are needed.

The graph for number of agents needed at each time frame is given below.

Number of Agents Required

Time slot	Agents
10_11	6
11_12	7
12_13	6
13_14	6
14_15	5
15_16	4
16_17	4
17_18	4
18_19	3
19_20	3
20_21	3
9_10	5

Insight 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 propose a manpower plan required during each time bucket in a day. Maximum Abandon rate assumption would be same 10%.

We had many of the things calculated already while finding the previous insights. We took what we needed from previous insights and customised our formulas accordingly to get the total manpower plan.

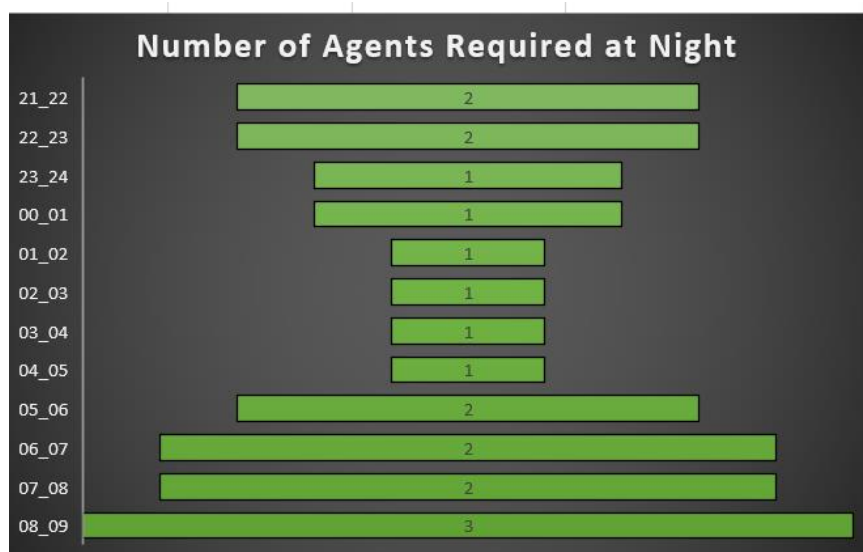| Assumptions:		
Agents working Hrs	9	hrs
Break	1.5	hrs
Agents working Hrs left after break	7.5	hrs
Agents Time spent on calls	**4.5**	**hrs**

Avg number of calls per day(9:00 AM to 9:00 PM)	5130	Nos	
Average call duration (9:00 AM to 9:00 PM)	199	seconds	
Total call duration for 90% Calls (in seconds)	918531	seconds	
Total call duration for 90% Calls (in hrs)	255	hrs	
Agents required per day	**57**		

Avg number of calls per night(9:00 PM to 9:00 AM)	1539	Nos	
Total call duration for 90% Calls (in hrs)	77	hrs	
Agents required per night	**17**	Nos	

Time Bucket	Number of calls	% of calls received	Number of agents needed
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
02_03	1	3%	1
03_04	1	3%	1
04_05	1	3%	1
05_06	3	10%	2
06_07	4	13%	2
07_08	4	13%	2
08_09	5	17%	3
Grand Total	**30**	**100%**	**17**

Result-

<mark>Total number of Agents required at night is 17.</mark> A chart is given as well.

Time Bucket	Number of agents needed
21_22	2
22_23	2
23_24	1
00_01	1
01_02	1
02_03	1
03_04	1
04_05	1
05_06	2
06_07	2
07_08	2
08_09	3
9_10	5
10_11	6
11_12	7
12_13	6
13_14	6
14_15	5
15_16	4
16_17	4
17_18	4
18_19	3
19_20	3
20_21	3
Total	**74**

Number of agents needed at each time frame
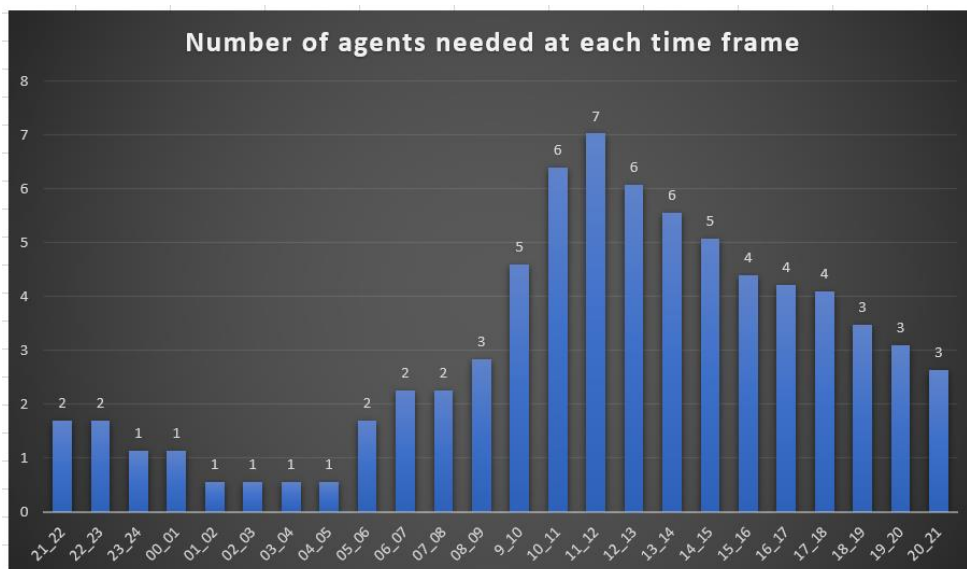
Project Conclusion

While analysing the data set provided, several meaningful insights were discovered that could not have been discovered by manually searching the dataset for insights.

We could also leverage the Excel-2021 tool and got a little more experienced in using the tool and also injecting different formulas and pivot tables and graphs and dashboards to look for insights.