**ABC Call Volume Trend Analysis**

**Project Description**

In this project, The dataset provided contains information from a Customer Experience (CX) Inbound calling team over a period of 23 days. The data includes details such as Agent\_Name, Agent\_ID, Queue\_Time (duration customers wait before being connected to an agent), Time (call time during the day), Time\_Bucket (time period for ease of analysis), Duration (call duration between customer and agent), Call\_Seconds (call duration in seconds), and call status (Abandon, Answered, Transferred).

Customer Experience teams play a crucial role in analyzing customer feedback and data to provide insights to the organization. They are responsible for various aspects of customer experience, including Customer experience programs, Digital customer experience, Design and processes, Internal communications, Voice of the customer, User experiences, Customer experience management, Journey mapping, Nurturing customer interactions, Customer Success, Customer support, Handling customer data, and Learning about the customer journey. These teams offer employment opportunities for call center agents and customer service agents who can take on roles such as Email support, Inbound support, Outbound support, and social media support.

Inbound customer support refers to the call center function that handles incoming calls from existing or prospective customers. It involves customer care representatives attending to these calls. The primary objective of inbound customer service is to attract, engage, and delight customers, thereby turning them into loyal advocates for the business. By effectively resolving customer problems and helping them achieve success with the product or service, businesses can create a positive experience that encourages customer loyalty and acts as a growth engine for the company.

**Approach**

Upon downloading the dataset, I thoroughly examined the columns to gain an understanding of their contents. To grasp the problem statement and align with the business objectives, I delved into the project description. As the project revolved around analyzing customer calls, I conducted additional research to familiarize myself with relevant terms mentioned in the dataset and project description. Once I comprehended the questions, I employed Excel to solve each query.

Using Excel's pivot table feature and a range of functions, I tackled the questions effectively. The pivot table function facilitated data summarization and analysis, while Excel functions enabled calculations and manipulations of the data. To present the findings, I leveraged Microsoft PowerPoint to create informative and visually appealing presentation files. This ensured clear communication of the insights derived from the dataset analysis.

**Tech-Stack Used**

MS Excel – I used this tool because this tool is used to create graphical representation of the

result and understand the result set better.

It also allows us to analyse large amount of data quickly and easily with less efforts than

other tools.

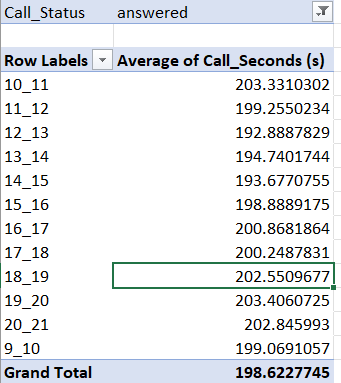
**Insights**

**Here is the link for the excel sheet where you can check whatever I did in this project and please download and open it in excel for better visualization.**

**Solution Link:**

[**https://docs.google.com/spreadsheets/d/1Q7fMeTbvUqYUEBRxhyUwBEf7pR58nnJg/edit?usp=sharing&ouid=115458343348656337915&rtpof=true&sd=true**](https://docs.google.com/spreadsheets/d/1Q7fMeTbvUqYUEBRxhyUwBEf7pR58nnJg/edit?usp=sharing&ouid=115458343348656337915&rtpof=true&sd=true)

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



1. 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, …..)

A screenshot of a computer

Description automatically generated with medium confidence

1. 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.)

|  |  |  |
| --- | --- | --- |
| **Row Labels** | **Sum of Call\_Seconds (s)** | **sum of calls\_hours** |
| 01-Jan | 676664 | 188 |
| 02-Jan | 574003 | 159 |
| 03-Jan | 812863 | 226 |
| 04-Jan | 861946 | 239 |
| 05-Jan | 846798 | 235 |
| 06-Jan | 829040 | 230 |
| 07-Jan | 757019 | 210 |
| 08-Jan | 735444 | 204 |
| 09-Jan | 541147 | 150 |
| 10-Jan | 778739 | 216 |
| 11-Jan | 785717 | 218 |
| 12-Jan | 709934 | 197 |
| 13-Jan | 691320 | 192 |
| 14-Jan | 564227 | 157 |
| 15-Jan | 556267 | 155 |
| 16-Jan | 674394 | 187 |
| 17-Jan | 945615 | 263 |
| 18-Jan | 796768 | 221 |
| 19-Jan | 750270 | 208 |
| 20-Jan | 759613 | 211 |
| 21-Jan | 639855 | 178 |
| 22-Jan | 621577 | 173 |
| 23-Jan | 553899 | 154 |
| **Grand Total** | **16463119** | **4573** |

Total time spent by the one agent in a day (60%7.5 given) = 4.5 hours

And the sum of hours all agents are on the call for Jan 1 is 188 hrs.

Total agents working can be calculated = Sum calls / Time per person

= 187.96/4.5 = 41.76

= ~ 42 agnets

To get the 70% of calls to be answered the agents works 4.5 hours a day with customers.

The number of agents required to attend the 90% of calls = 90\*41.76/70

= 53.69 = ~ 54 agents

|  |  |  |
| --- | --- | --- |
| **Row Labels** | **Count of Customer\_Phone\_No** | **agents req** |
| 10\_11 | 11.28% | 6 |
| 11\_12 | 12.40% | 7 |
| 12\_13 | 10.72% | 6 |
| 13\_14 | 9.80% | 5 |
| 14\_15 | 8.95% | 5 |
| 15\_16 | 7.76% | 4 |
| 16\_17 | 7.45% | 4 |
| 17\_18 | 7.23% | 4 |
| 18\_19 | 6.13% | 3 |
| 19\_20 | 5.48% | 3 |
| 20\_21 | 4.67% | 3 |
| 9\_10 | 8.13% | 4 |
| **Grand Total** | **100.00%** | **54** |

To find the number of agents required for each time bucket We have to create a pivot table and drag the time bucket column to the row value and the count of customer phone\_no values section and change it to the percentage of the total.

After that multiply the percentage value of count of customer phone\_no with 54.

1. 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%.

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 into lunch 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 30 days.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Count of Customer\_Phone\_No** | **Call Status** |  |  |  |
| **Days** | **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 | 5129.91304 |
|  |  |  |  | ~ 5130 |

We need to find first average of daily calls for that create a pivot table then add the column that are shown above and we get that the average of daily calls form 9am to 9pm is nearly about 5130.

as per the question if there are 100 calls a day then the customers calls 30 of them in night i.e 30%

Average calls at night = 1539

additional hours required to attend the 90% calls we use the function round (=ROUND((H6\*0.9\*198.6)/3600,0)) = 76 hours

additional agent required = ROUND(76/4.5,0) = 17 agents

|  |  |  |  |
| --- | --- | --- | --- |
| **time bucket** | **distribution of calls** | **time distribution** | **agents required** |
| 10\_11 | 3 | 10 | 2 |
| 11\_12 | 3 | 10 | 2 |
| 12\_13 | 2 | 15 | 1 |
| 13\_14 | 2 | 15 | 1 |
| 14\_15 | 1 | 30 | 1 |
| 15\_16 | 1 | 30 | 1 |
| 16\_17 | 1 | 30 | 1 |
| 17\_18 | 1 | 30 | 1 |
| 18\_19 | 3 | 10 | 2 |
| 19\_20 | 4 | 7.5 | 2 |
| 20\_21 | 4 | 7.5 | 2 |
| 9\_10 | 5 | 6 | 3 |
| total | 30 | 1 | 15 |

To calculate the number of agents required for each time bucket at night, first we have to add the column time bucket and distribution of calls then find the time distribution by dividing the 30 by each tdistribution of calls then we have to find the agents required and for that divide the total no of agents required by each time distribution.

**Result**

Through the successful completion of this project, I have gained valuable knowledge and practical experience in utilizing various Excel tools for data analysis. I have become proficient in examining data arranged in rows and columns, and I have learned how to employ different types of formulas effectively within spreadsheets. Furthermore, I have discovered the practical applications of line charts, scatter charts, column charts, and pivot tables for data analysis in the context of a customer service company.

One of the key aspects of my learning has been understanding how to analyze data in order to gauge customer satisfaction. By employing Excel's features such as pivot tables, functions, and formulas, I have been able to enhance my skills in extracting meaningful insights from customer data. This has allowed me to contribute to improving customer satisfaction levels and making informed decisions based on the data-driven analysis.

Engaging with Excel's pivot tables has been particularly enlightening, as I have learned how to summarize and manipulate large sets of data efficiently. This proficiency has empowered me to derive valuable trends, patterns, and statistical information from the raw data, enabling me to generate meaningful reports.

**THANK-YOU**