ABC CALL VOLUME TREND ANALYSIS

EXCEL HYPERLINK

PROJECT DESCRIPTION

In this project, we'll be diving into the world of Customer Experience (CX) analytics, specifically focusing on the inbound calling team of a company. We have provided a dataset that spans 23 days and includes various details such as the agent's name and ID, the queue time (how long a customer had to wait before connecting with an agent), the time of the call, the duration of the call, and the call status (whether it was abandoned, answered, or transferred).
A Customer Experience (CX) team plays a crucial role in a company. They analyze customer feedback and data, derive insights from it, and share these insights with the rest of the organization. This team is responsible for a wide range of tasks, including managing customer experience programs, handling internal communications, mapping customer journeys, and managing customer data, among others.

One of the key roles in a CX team is that of the customer service representative, also known as a call center agent. These agents handle various types of support, including email, inbound, outbound, and social media support.
Inbound customer support, which is the focus of this project, involves handling incoming calls from existing or prospective customers. The goal is to attract, engage, and delight customers, turning them into loyal advocates for the business.
Advertising is a crucial aspect of any business. It helps increase sales and makes the audience aware of the company's products or services. The first impressions of a business are often formed through its advertising efforts.
The target audience for businesses can be local, regional, national, or international. Various types of advertising are used to reach these audiences, including online directories, trade and technical press, radio, cinema, outdoor advertising, and national papers, magazines, and TV.
The advertising business is highly competitive, with many players bidding large amounts of money to target the same audience segment. This is where the company's analytical skills come into play. The goal is to identify those media platforms that can convert audiences into customers at a low cost.
In this project, we'll be using your analytical skills to understand the trends in the call volume of the CX team and derive valuable insights from it.

APPROACH

Firstly, we downloaded the given dataset from given link and our dataset contains 117989 rows and 13 columns. After this we are understanding the given data variables and their relationships between them and analyzing the questions and how to extract the valuable insights from them. After this for all questions we applied the many statistical method, excel function, pivot table and logics to find the relationship of variables and extract the valuable insights from them.

TECH-STACK USED

We used the Microsoft Excel 2019 for EDA and Feature Engineering and for whole project and Microsoft Word 2019 used to make presentation and convert into PDF.

We used MS Excel because it enables uses to format, organize and calculate data in a spreadsheet and it make easier to us to extract the valuable insights. Also it allows users to modify the fields and functions that perform computations when working with more complex data. We used the given dataset to extract the valuable insights.

INSIGHTS

Task 1 : What is the average duration of calls for each time bucket?

In this question we have to find the average duration of call for each time bucket, so it will help us to know the how agent giving their times to customers to solve their issues and how they deal with customers so it help us to increase their productivity and their sales or services.

Firstly, we separate the Time bucket and Call seconds columns from main data and copied to new sheet for better understanding then we made a pivot table by using the pivot table function and calculated the average of call seconds of calls which are answered and transferred to know how much time agents taking to deal with customers.

Here's our output :

Call_Status	(Multiple Items)
Row Labels	**Average of Call_Seconds (s)**
10_11	202.5938769

11_12	198.6600372
12_13	191.1536695
13_14	193.2963998
14_15	191.9543656
15_16	195.8571429
16_17	198.2948638
17_18	197.8801445
18_19	200.1208565
19_20	202.4782232
20_21	202.5173611
9_10	198.7373282
Grand Total	**196.96**

Task 2 : Can you create a chart or graph that shows the number of calls received in each time bucket?

In this question, we have to create a chart to shows the number of calls received in each time bucket so it will helps us to analyze the agents attend calls and answering the calls and dealing with their problems and requirements. This problem also help us to know the exact numbers of call from customers doing in which time bucket so we can increase our service for that particular time bucket it will also helps us to increase our sales or services also we get focused in impression of business and giving the advertising efforts.

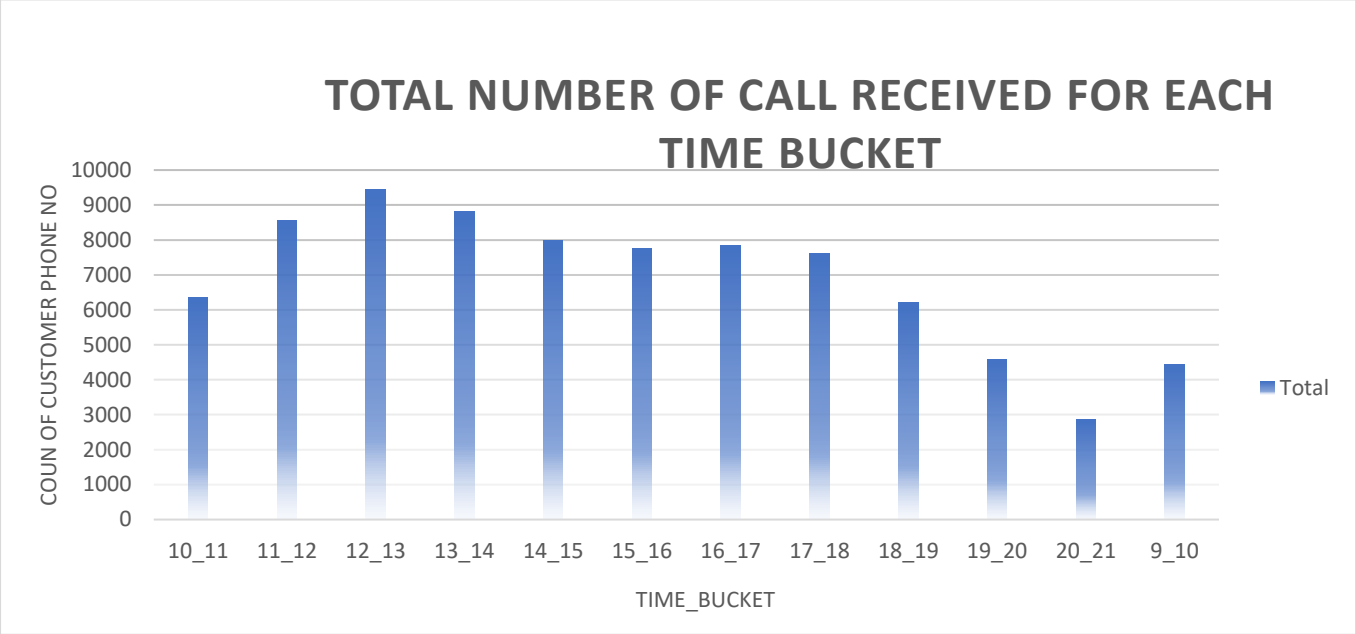
For solve this question, firstly we extract the required columns from main data to new sheet to better understanding and we created the pivot table by using the pivot table function and also we find the count of customer phone no and using filter of call status as answered to get know how much call answered for particular time bucket.

After this, we made a bar graph to visualization for better understanding.

Here's our output :

Call_Status	answered
Time_Bucket	**Count of Customer_Phone_No**
10_11	6368
11_12	8560
12_13	9432
13_14	8829
14_15	7974
15_16	7760
16_17	7852
17_18	7601
18_19	6200
19_20	4578

20_21	2870
9_10	4428
Grand Total	**82452**



Task 3 : What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

In this question, we have to find the minimum number of agents required in each time bucket to reduce the abandon rate to 10 %.

In this dataset, we know the agents works 6 days per week and working hours per day is 9 hours. On average each agents take 4 leaves per month. An agent's working hours are 9 hours in which they spend 1.5 hours on lunch and snacks in the office. On average an agent spends 60% of their actual working hours on calls with customers/users. So from this we can say that an Agent works 7.5 hours a day.

Firstly, we extract date and time, call duration, call status columns from main data and copied to new sheet for better understanding after this we made a pivot table by using pivot function and by using pivot table we find the count of call duration of answered, abandon and transfer call. It will help us to know how the agents deal with customers.

After this, we find the average value of all call duration terms and we converted into percentage so it will help us to know the exact number of abandoned call duration. Now, we have to calculate the working hours of per agent so we have to deal with values and use simple arithmetic functions after thjs we got our value which is 4.5 hours in a day and the average call duration of agents(in seconds) is 196.96

By using those values we can find the total numbers of hours needed to reduce the abandon 30% to 10%. So we got 253 hours by using excel function.

If we divide the total numbers of hours needed to reduce the abandon 30% to 10% with working hours per agent in a day so finally we got our answer which is 56.

From our analysis, we can say that to reduce the abandon 30% to 10% so we needed 56 more agents and they have to give 253 hours to reduce the abandon 30% to 10%.

We made a table to propose the man's power to each time bucket to reduce the time bucket and we arranged the agents for each time bucket to reduce the abandon calls and increasing the services and enhanced the customer's experience.

If we decreasing this value to 10% it means, We are enhanced the experience for customers and simultaneously increasing the range of managing the customer experience, handling the internal communications, mapping the customer journey. It will help us to increase the sales and services.

Here's our output :

Averages of all values	1496	3585	
Percentage of all values	29%	70%	

working hours of per agent	**4.5**
Average call duration of agent (in seconds)	**196.96**
Total no of hours needed to reduce the abandon 30% to 10%	**253**
No of Agents needed to reduce the abandoned 30% to 10%	56

Time Bucket	Count of call status	Count of duration(in %)	Count of call duration	No of Agents required for time bucket
10_11	13313	11.28%	0.1128	6
11_12	14626	12.40%	0.124	7
12_13	12652	10.72%	0.1072	6
13_14	11561	9.80%	0.098	6
14_15	10561	8.95%	0.0895	5
15_16	9159	7.76%	0.0776	4
16_17	8788	7.45%	0.0745	4
17_18	8534	7.23%	0.0723	4
18_19	7238	6.13%	0.0613	3
19_20	6463	5.48%	0.0548	3
20_21	5505	4.67%	0.0467	3
9_10	9588	8.13%	0.0813	5
Grand Total	117988	100.00%	1	56

Task - 4 : **Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%.**

In this question we have to propose a manpower plan for each time bucket for a day and keeping the abandon rate at 10%.

We already know that decrease the abandon call percentage will increase the productivity of company and each and every would focused to increase their sales and services to make more profit.

Most of the agents are available at 9 am to 9 pm but between 9pm to 9 am mostly abandon call will increase and it might be affect in company services so we could increase the number of agents to manage and reduce the abadon call numbers.

Firstly, we extract the date and time, duration, call status columns from main data and copied to new sheet to better understanding after this we made a pivot table by using pivot function and by using pivot table we find the count of call duration of answered, abandon and transfer call. It will help us to know how the agents deal with customers.

After this, we find the average value of all call duration terms and we converted into percentage so it will help us to know the exact number of abandoned call duration. Now, we have to calculate the working hours of per agent so we have to deal with values and use simple arithmetic functions after thjs we got our value which is 4.5 hours in a day and the average call duration of agents(in seconds) is 196.96.

By using those value we can find the total numbers of hours needed to reduce the abandon 30% to 10%. So we got 253 hours by using excel function. If we divide the total numbers of hours needed to reduce the abandon 30% to 10% with working hours per agent in a day so finally we got our answer which is 76.

Now for night calls and to decrease the abandon calls, for this we have to find the average numbers of calls comes in night by using excel function we got 1539 calls were came in night according to our data. Now 76 hours needed to maintain the abandoned rate at 10%. So atleast 17 agents required to maintain the abandoned rates.

Also our main task for every 100 calls that customers make between 9 am and 9 pm, they require 56 agents more and for night call if they make 30 calls at night between 9 pm and 9 am so for this task and to maintain the abandon rate at 10% we would require 17 agents more for 9pm- 9am. Total 73 agents are required and this can give overall positive impact to our company and might increase productivity of works , sales or service and enhanced the experience of customers.

Here's our output :

Averages of all values	1496	3585	
Percentage of all values	29%	70%	

working hours of per agent	**4.5**
Average call duration of agent (in seconds)	**196.96**
Total no of hours needed to reduce the abandon 30% to 10%	**253**
No of Agents needed to reduce the abandoned 30% to 10%	56
Average number of call comes in night	1539
No of hours needed to maintain the abandoned rate to 10%	76
Agents required to maintain the abandoned rate to 10%	17
for every 100 calls that customers make between 9 am and 9 pm, they also make 30 calls at night between 9 pm and 9 am	73

Time Bucket	No of calls	call duration	No of Agents
9pm - 10pm	3	0.1128	2
10pm-11pm	3	0.124	2
11pm-12am	2	0.1072	2
12am-1am	2	0.098	2
1am-2am	1	0.0895	2
2am-3am	1	0.0776	1
3am-4am	1	0.0745	1
4am-5am	1	0.0723	1
5am-6am	3	0.0613	1
6am-7am	4	0.0548	1
7am-8am	4	0.0467	1
8am-9am	5	0.0813	1
Total	30	1	17

RESULT

- In this project we learned how the analyst of the company inbound with the team and how they works to managing the customer experience , handling the internal communications and mapping the customer journey.
- From this project, we learned how to improve the customer's satisfaction and how to manage the man's power to reduced the abandon calls and increase our company sales or services.
- I also learnt and analyzed the number of calls received in each time bucket so it will helps us to analyze the agents attend calls and answering the calls and dealing with their problems and requirements.
- I learnt how the data analyst engaged with the advertising business which is highly competitive, with many players bidding large amounts of money to target the same audience segment. This is where the company's analytical skills come into play. Our goal is to identify those media platforms that can convert audiences into customers at a low cost.
- I gained skills how to use pivot table and how to visualize by using graph, chart, scatter plot to the given output to better understanding the data.
- From this project, we learned and focused on various functions and applying the data analysis ways and techniques to solve the questions and extract the valuable insights.

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THANK YOU