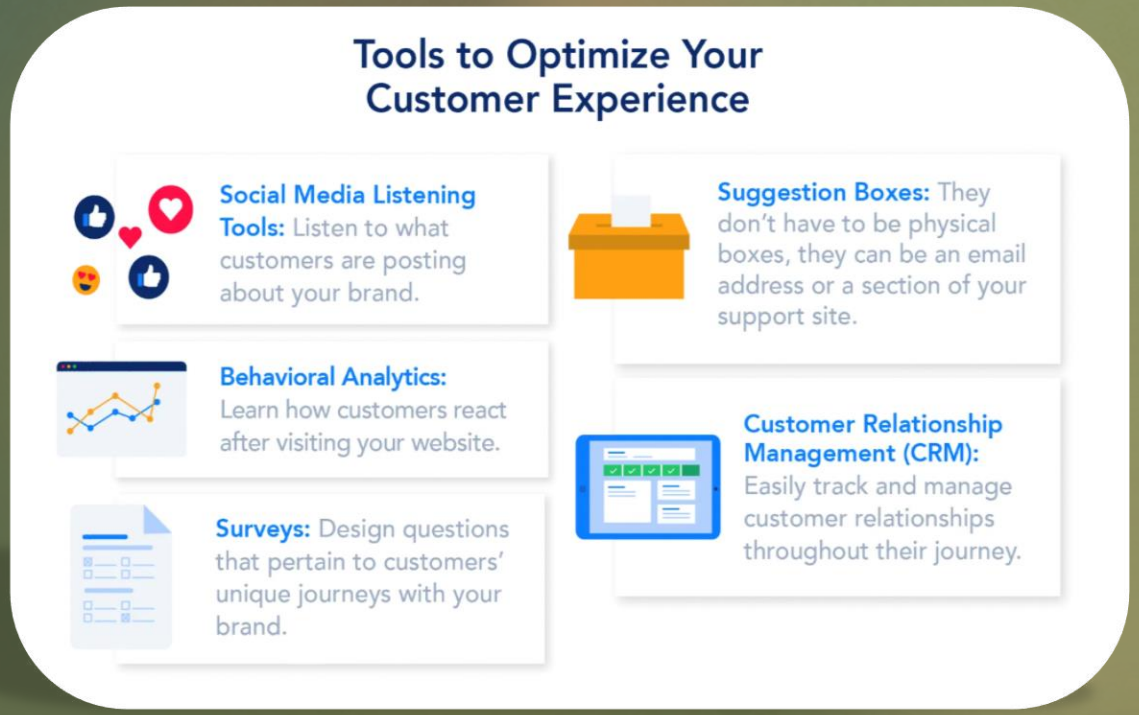
ABC CALL VOLUME TREND ANALYSIS



Trainity project

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PROJECT DESCRIPTION

- A Customer Experience (CX) Dataset of Inbound calling team for 23 days, which includes various data points such as **Agent_Name**, **Agent_ID**, **Queue_Time**, **Time**, **Time_Bucket**, **Duration**, **Call_Seconds**, and **call status**.
- A CX team analyzes **customer feedback** and data and performs roles such as CX programs, digital CX, internal communication, VoC, user experience, customer support, and more.
- AI-powered customer experience tools, like **IVR**, **RPA**, Predictive Analytics, and Intelligent Routing, have a significant impact. Customer service representatives can work in different roles, such as email, inbound, outbound, or social media support. Inbound support handles customer calls and builds customer loyalty. Advertising is used to increase sales or awareness of a business, and can take various forms such as online directories, press, radio, cinema, outdoor advertising, papers, magazines, or TV.

Approach

Data Importing
- Importing the Dataset and studying the data.

Data Cleaning
- Cleaning & preprocessing data by removing irrelevant columns & values.

Data exploration
- Understand the relationships between variables, detect patterns, and identify potential problems or opportunities.

Data modelling
- Creating pivot tables/ data models for the required tasks.

Data visualization
- Creating charts, graphs for better demonstration.

TECH STACK USED

MS Excel 2019

MS Powerpoint

TASK A.

To calculate the average call time duration for all incoming calls received by agents (in each Time_Bucket)

Call_Status	answered
Wrapped _By	Agent
Time_bucket	**Average of Call_Seconds (s)**
10_11	210.32
11_12	204.18
12_13	192.92
13_14	195.27
14_15	195.32
15_16	198.89
16_17	199.38
17_18	201.39
18_19	204.09
19_20	205.42
20_21	203.03
9_10	199.45
Grand Total	**199.81**

INSIGHTS

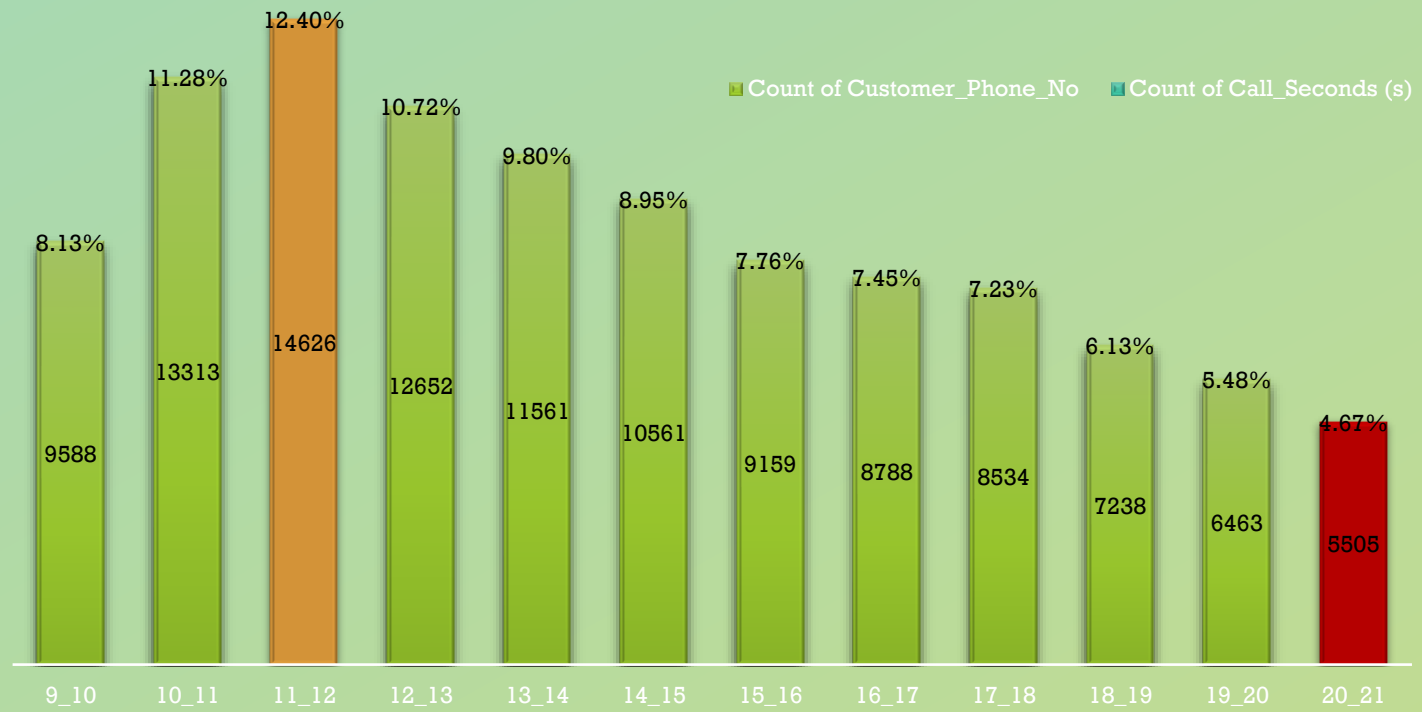
- In the chart it is observed that time_bucket series is applied on the x-axis (row-label) and Average of Call_Seconds (s) in y-axis , which is calculated using pivot table also the Call_status & Wrapped_by has been filtered to “answered” & “agent” respectively.
- In Average of Call_Seconds (s) duration total is 199.81s where the timeframe between 10-11 & 19-20 having the highest number of call duration of 210.32s & 205.42s respectively.
- The timeframe between 12-13 has the lowest call duration of 192.92s.

TASK B.

Total volume/ number of calls coming in via charts/ graphs [Number of calls v/s Time].
Inferences:

- Timeframe between 11 to 12 has the highest number of calls and 20-21 the least number of calls
- The count is converted to percentage where the total count percent is considered in terms of 100%

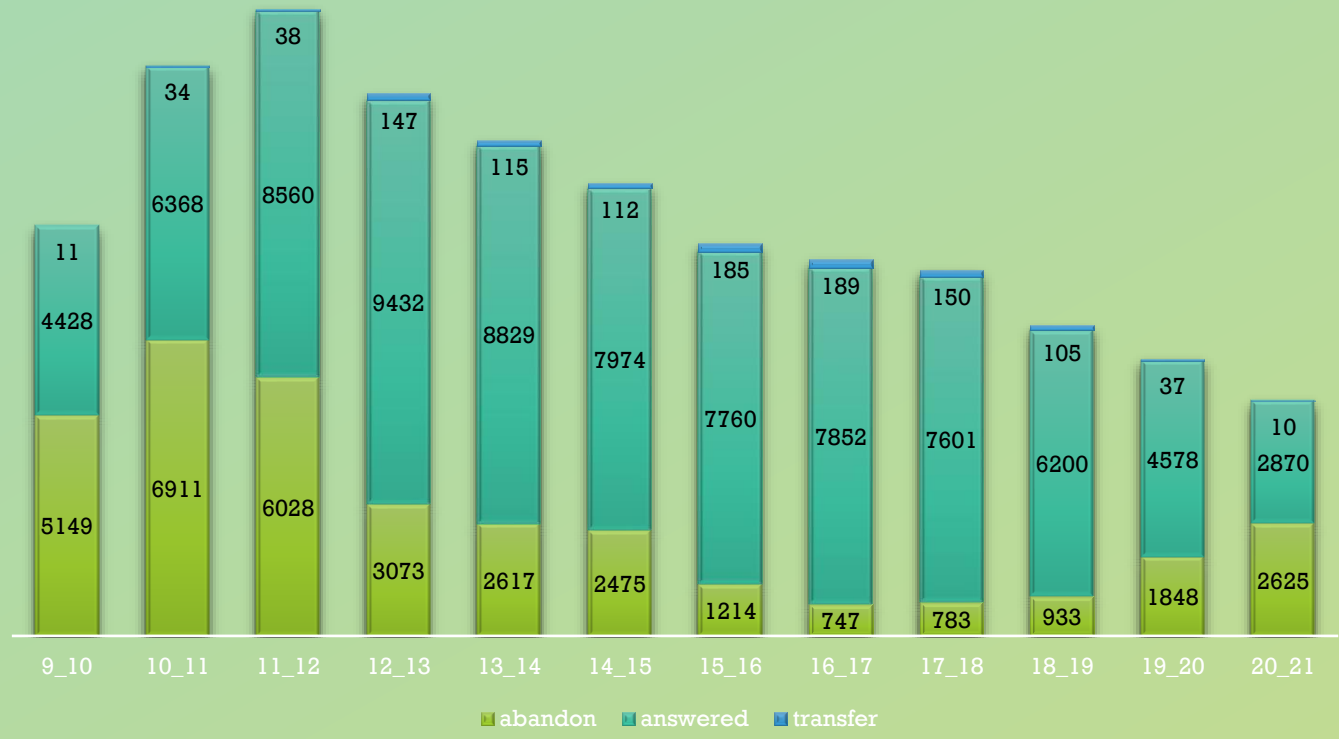
Time_bucket	Count of Customer_Phone _No	Count % of Call_Seconds (s)
9_10	9588	8.13%
10_11	13313	11.28%
11_12	14626	12.40%
12_13	12652	10.72%
13_14	11561	9.80%
14_15	10561	8.95%
15_16	9159	7.76%
16_17	8788	7.45%
17_18	8534	7.23%
18_19	7238	6.13%
19_20	6463	5.48%
20_21	5505	4.67%
Grand Total	**117988**	**100.00%**



TASK B.

- It can be noticed from the chart that in the beginning and end, abandon calls are slightly higher as compared to answered and transferred calls.
- The calls are typically highest during the day time.

Count of Customer_Phone_No	Call_Status			
Time_bucket	abandon	answered	transfer	Grand Total
9_10	5149	4428	11	9588
10_11	6911	6368	34	13313
11_12	6028	8560	38	14626
12_13	3073	9432	147	12652
13_14	2617	8829	115	11561
14_15	2475	7974	112	10561
15_16	1214	7760	185	9159
16_17	747	7852	189	8788
17_18	783	7601	150	8534
18_19	933	6200	105	7238
19_20	1848	4578	37	6463
20_21	2625	2870	10	5505
Grand Total	34403	82452	1133	117988

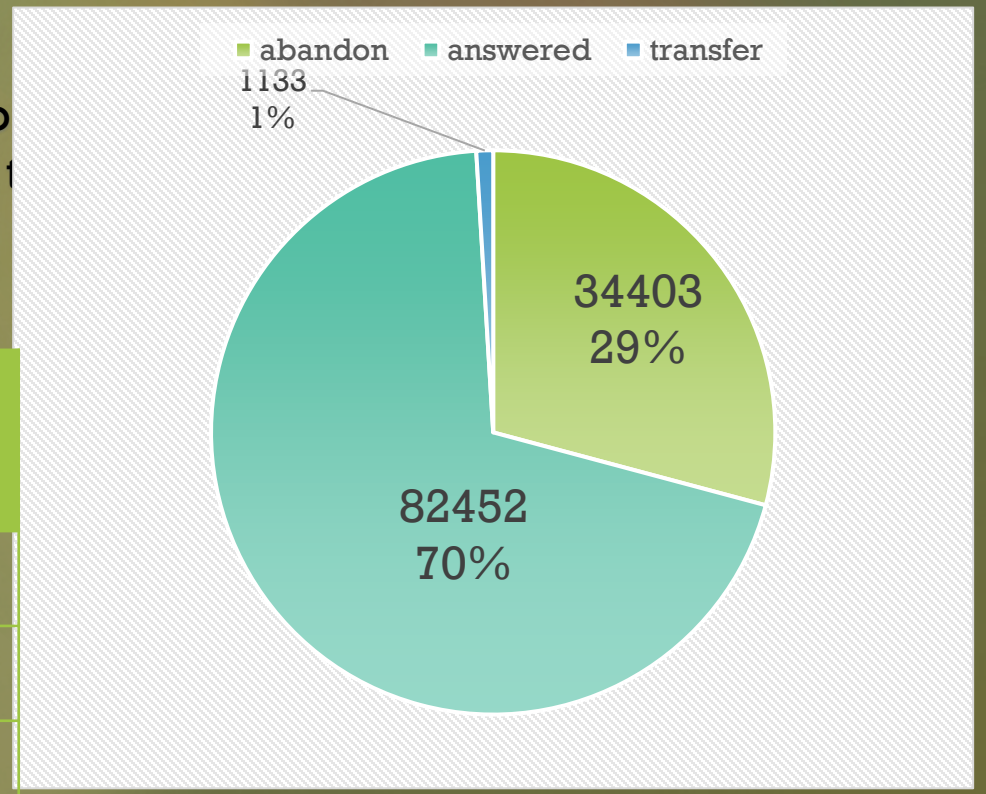


TASK C.

To calculate minimum number of agents required in each time bucket so that at least 90 calls needs to be answered out of 100.

- Using pie chart to Visualize the overall percentage distribution of the Call_Status column.
- Firstly by converting the count value of customer phone no. to percentage for an easier analysis of the distribution and finding t average of Call seconds.

Call_Status	Count of Customer_Phone_No	Percentage Count of Customer_Phone_No	Average of Call_Seconds (s)
abandon	34403	29.16%	0
answered	82452	69.88%	198.6227745
transfer	1133	0.96%	76.14651368
Grand Total	117988	100.00%	139.5321473



time_bucket	Count of Call_Seconds (s)	Count of Call_Hours	manpower
9_10	8.13%	0.08	5
10_11	11.28%	0.11	6
11_12	12.40%	0.12	7
12_13	10.72%	0.11	6
13_14	9.80%	0.10	5
14_15	8.95%	0.09	5
15_16	7.76%	0.08	4
16_17	7.45%	0.07	4
17_18	7.23%	0.07	4
18_19	6.13%	0.06	3
19_20	5.48%	0.05	3
20_21	4.67%	0.05	3
Grand Total	100.00%	100.00%	56

Assumption Given	Hours
Total Working Hours(per agent)	9
Lunch	1.5
Actual work hours	7.5
Occupancy (60% productivity)	4.5

Date	Sum of Call_Seconds (s)	Sum of Call_Hours
01-Jan	676664	187.96

total agents (60%)	37.59 ~ 38
total agents (90%)	56

- Calculating working agents by dividing average calls per day with total time spent by a man.
- Taking into consideration, 01st Jan's total call duration and converting it to hours.
- **Total Agents** = 187.96/5 = 37.592 ~ 38
- To calculate the number of agents required in each time bucket so that at least 90 calls can be answered:

Total Agents = 90* total agents/60 =90*38/60 = 56.39 ~ 56

- Using these we can calculate the manpower required for abandon rate to reduce to 10%:

Manpower required= Percent count of Call_Hours*56

TASK D.

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

- Calculating Agents by using the 30 day distribution and using time distribution by dividing the total calls by 30.
- Calculating Agents by dividing total hours occupancy rate (10%) by occupancy rate (60%).

Average calls from 9AM to 9 PM	5130
Total calls made at night (30%)	1539
Hours needed to meet 10% abandon rate	76.56
Agents needed to meet criteria	17

Time_Bucket	Sum of Call Distribution	Time distribution	Agents required	Actual Agents required
9pm-10pm	3	0.10	1.70	2
10pm-11pm	3	0.10	1.70	2
11pm-12-am	2	0.07	1.13	1
12am-1am	2	0.07	1.13	1
1am-2am	1	0.03	0.57	1
2am-3am	1	0.03	0.57	1
3am-4am	1	0.03	0.57	1
4am-5am	1	0.03	0.57	1
5am-6am	3	0.10	1.70	2
6am-7am	4	0.13	2.27	2
7am-8am	4	0.13	2.27	2
8am-9am	5	0.17	2.83	3
Grand Total	**30**	**0.90**	**17.00**	**17.00**

RESULTS

During the project, I have learned about various techniques and possible ways to solve or deal with any problem. Also, how minute error leads to wrong calculations and thus wrong result, therefore, one should be very vigilant while doing any type of analysis.

Throughout this project, I have gained valuable insights into the impact of an analyst in the customer service department.

Additionally, I have delved into the realm of behavioral analytics, which involves studying customer behavior patterns to identify trends, preferences, and opportunities for enhancing the overall customer experience.

Analysis link : link

Thank You..!

Submitted by
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