ABC call volume trend analysis

Dataset:

The dataset 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).

About the customer experience team

A Customer Experience (CX) team plays a crucial role in a company. They analyse 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.

In the current era, several AI-powered tools are being used to enhance customer experience. These include Interactive Voice Response (IVR), Robotic Process Automation (RPA), Predictive Analytics, and Intelligent Routing.

One of the key roles in a CX team is that of the customer service representative, also known as a call centre agent. These agents handle various types of support, including email, inbound, outbound, and social media support.

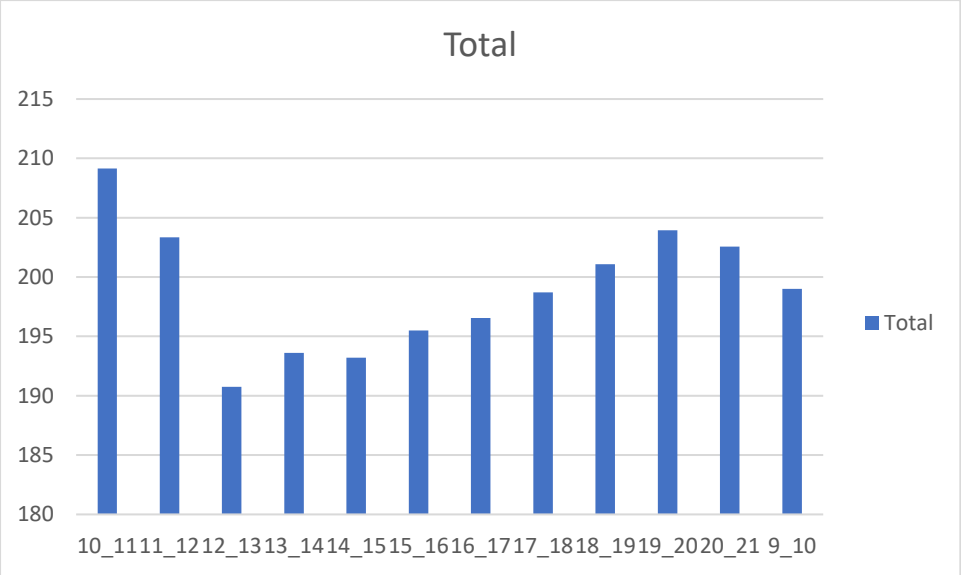
Inbound customer support, which is the focus of this project, involves handling incoming calls from existing or prospective customers. The goal is to attract, engage, and delight customers, turning them into loyal advocates for the business.

Analysis:

Average duration of all incoming calls received by agents. Calculated for each time bucket.

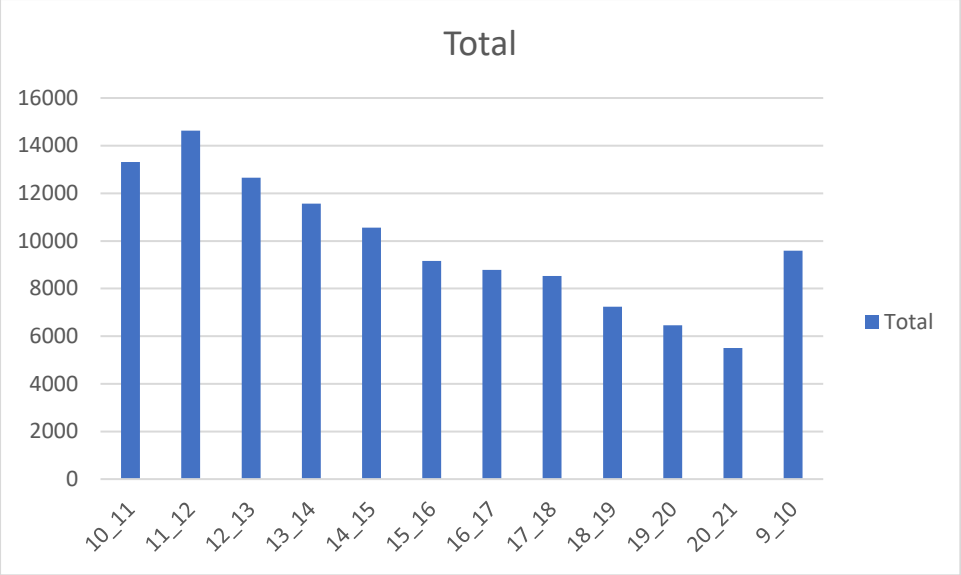
Row Labels	Average of Call_Seconds (s)
10_11	209.146173
11_12	203.3522837
12_13	190.7582262
13_14	193.5996208
14_15	193.196702
15_16	195.4858855
16_17	196.542932
17_18	198.7127846
18_19	201.0931383
19_20	203.9389068
20_21	202.5537849
9_10	199.0057078

Grand Total	197.7097159

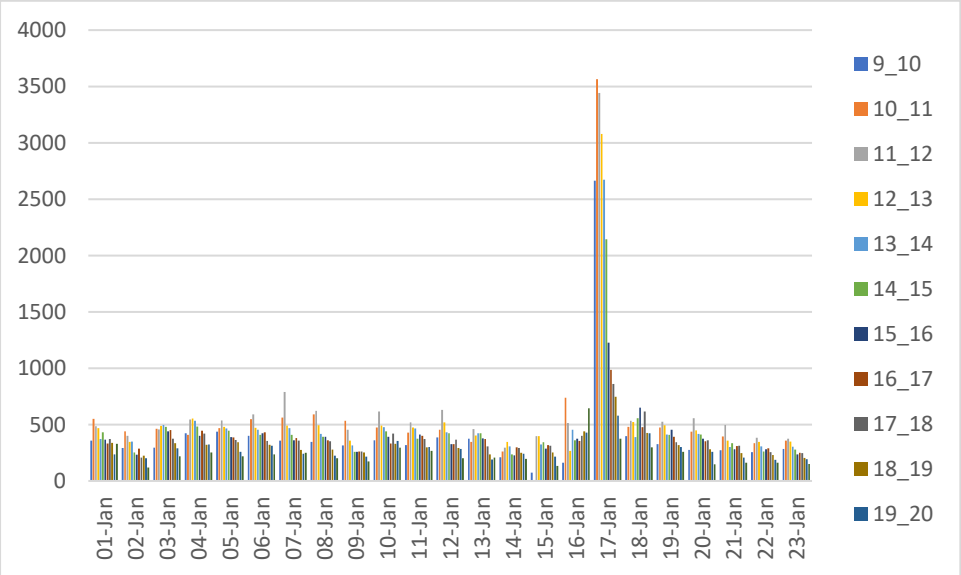


Visualizing the total number of calls received against time.

Row Labels	Count of Customer_Phone_No
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**



Count of Customer_Phone_No	Column Labels												
Row Labels	9_10	10_11	11_12	12_13	13_14	14_15	15_16	16_17	17_18	18_19	19_20	20_21	Grand Total
01-Jan	359	552	487	469	373	433	367	331	372	337	235	329	4644
02-Jan	293	440	399	346	348	254	233	286	207	223	202	120	3351
03-Jan	295	462	458	489	497	479	439	452	376	334	290	218	4789
04-Jan	423	408	546	555	534	484	399	445	419	321	325	254	5113
05-Jan	436	468	538	479	465	445	388	386	364	344	258	219	4790
06-Jan	400	547	592	472	454	408	422	433	356	320	311	236	4951
07-Jan	359	563	790	492	470	408	362	380	358	275	240	251	4948
08-Jan	347	592	621	493	418	391	393	360	352	279	225	201	4672
09-Jan	314	534	453	358	314	257	258	260	260	253	217	174	3652
10-Jan	362	473	617	490	478	441	393	332	419	328	354	296	4983
11-Jan	318	430	519	475	466	376	411	401	372	299	302	268	4637
12-Jan	385	455	630	521	432	424	326	326	367	292	283	202	4643
13-Jan	376	347	459	404	424	423	377	372	307	237	190	207	4123
14-Jan	210	260	294	346	306	237	226	298	293	250	240	195	3155
15-Jan	73		398	397	325	345	286	319	313	253	215	134	3058
16-Jan	162	738	515	268	455	361	375	354	400	439	430	645	5142
17-Jan	2665	3565	3443	3080	2673	2145	1228	986	861	746	579	376	22347
18-Jan	397	481	533	523	389	557	650	478	617	427	423	299	5774
19-Jan	326	474	524	495	411	409	453	391	343	317	302	258	4703
20-Jan	275	438	558	448	418	411	374	351	362	281	257	149	4322
21-Jan	273	394	496	358	302	334	282	309	313	247	206	161	3675
22-Jan	256	334	382	346	306	261	281	289	256	231	187	162	3291
23-Jan	284	358	374	348	303	278	236	249	247	205	192	151	3225
Grand Total	9588	13313	14626	12652	11561	10561	9159	8788	8534	7238	6463	5505	117988



Assumptions: An agent works for 6 days a week; On average, each agent takes 4 unplanned leaves per month; An agent's total working hours are 9 hours, out of which 1.5 hours are spent on lunch and snacks in the office. On average, an agent spends 60% of their total actual

working hours (i.e., 60% of 7.5 hours) on calls with customers/users. The total number of days in a month is 30.

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

The current rate of abandoned calls is approximately 30%. Propose a plan for manpower allocation during each time bucket (from 9 am to 9 pm) to reduce the abandon rate to 10%. In other words, you need to calculate the minimum number of agents required in each time bucket to ensure that at least 90 out of 100 calls are answered. What is the minimum number of agents required in each time bucket to reduce the abandon rate to 10%?

We have 65 employees

On an average the customers are abandoning the call after being queued for 92 seconds

Column1	Column2	Column3	Column4	Column5	Column6	Column7	Column8	Column9	Column10	Column11	Column12	Column13
average number of calls	416.8695652	605.13636	635.91304	550.08696	502.65217	459.17391	398.21739	382.08696	371.043478	314.695652	281	239.347826
	417	606	636	551	503	460	399	383	372	315	281	240
90% of the calls	375.3	545.4	572.4	495.9	452.7	414	359.1	344.7	334.8	283.5	252.9	216
	376	546	573	496	453	414	360	345	335	284	253	216
number of employees required	20.88888889	30.333333	31.833333	27.555556	25.166667	23	20	19.166667	18.6111111	15.7777778	14.0555556	12

On an average we get maximum number calls from 11-12 time bucket

Number of calls a single employee can take in an hour =3600/average call duration=18 (approximately)

18*number of employees>no of customer calls

9-10	21
10-11	31
11-12	32
12-13	28
13-14	26
14-15	23
15-16	20
16-17	20
17-18	19
18-19	16
19-20	15
20-21	12

Customers also call ABC Insurance Company at night but don't get an answer because there are no agents available. This creates a poor customer experience. Assume that 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. Propose a manpower plan for each time bucket throughout the day, keeping the maximum abandon rate at 10%.

PM	9pm-10pm	10pm-11pm	11pm-12pm	12pm-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
	12.50608696	18.15409091	19.0773913	16.5026087	15.079565	13.775217	11.946522	11.462609	11.1313043	9.44086957	8.43	7.18043478
	13	19	20	17	16	14	12	12	12	10	9	8
	11.7	17.1	18	15.3	14.4	12.6	10.8	10.8	10.8	9	8.1	7.2
	12	18	18	16	15	13	11	11	11	9	9	8

Even if we have 1 or 2 people it might work.

(As a person can take 18 calls in an hour)

LINK:
https://docs.google.com/spreadsheets/d/1s3wHS1bQiEieEyi23JJlzlj3V6WKQ3SY/edit?usp=sharing&ouid=117379562832253850032&rtpof=true&sd=true