ABC CALL VOLUME TREND ANALYSIS

DESCRIPTION :

IN THE FOLLOWING PROJECT WE HAVE BEEN PROVIDED WITH THE DATASET OF CUSTOMER EXPERINCE IN WHICH THE DATA INCLUDES AGENT_NAME,AGENT_ID,QUEQU TIME,TIME_BUCKET,DURATION CALL SECOND,CALL STATUS ETC AND BY ANALYSING THIS DATASET WE HAVE TO BASICALLY SHARE IT TO DIFFERENT ORGANISATION.

HERE ARE SOME OF OUR FINDINGS:

- CALCULATE THE AVERAGE CALL TIME DURATION FOR ALL INCOMING CALLS RECEIVED BY AGENTS.
- NUMBER OF CALL COMING IN EACH TIME BUCKET.
- WE HAVE TO CALCULATE MINIMUM NUMBER OF AGENTS REQUIRED IN EACH TIME BUCKET SO THAT AT LEAST 90 CALLS SHOULD BE ANSWERED OUT OF 100.
- WE HAVE PROPOSE A MANPOWER PLAN REQUIRED DURING EACH TIME BUCKET IN A DAY. MAXIMUM ABANDON RATE ASSUMPTION WOULD BE SAME 10%.

APPROACH :

IN ORDER TO SOLVE ANY CASE STUDY APPROACH PLAYS A VERY VITAL ROLE SO WHILE SOLVING THIS CASE STUDY MY FIRST APPROACH TO ANALISE IT THROUGH MICROSOFT EXCEL AND WITH THE HELP OF EXCEL I CREATED MULTIPLE PIVOT CHART AND PIVOT TABLE WHICH HELP ME TO SHOW MY ANALYSIS IN MORE ACCURATE AND VISUALISE FORMAT.

TECH-STACK USED

MICROSOFT EXCEL:

WHILE SOLVING THIS CASE STUDY WE HAVE USED EXCEL TO SHOW MY ANALYSIS IN MORE VISUALISE FORMAT.

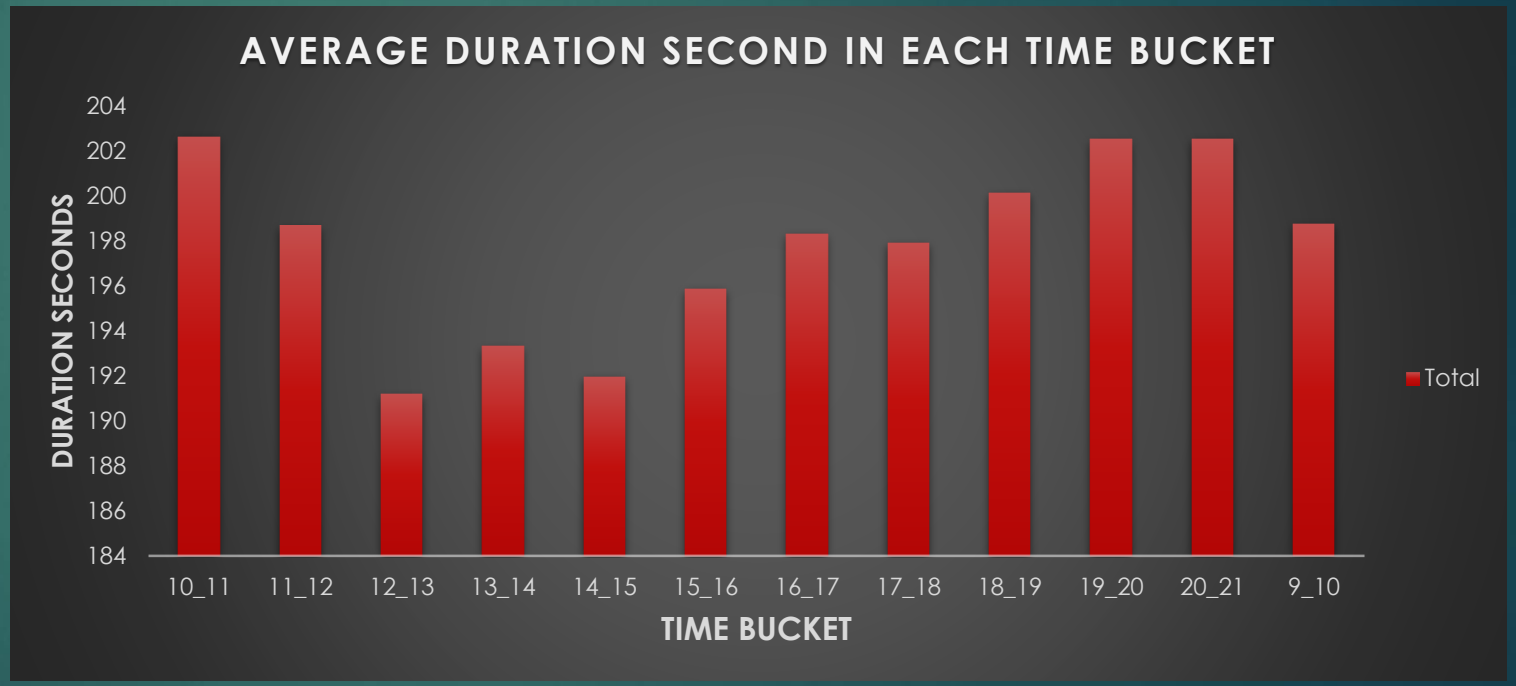
POWER POINT:

IN THIS CASE STUDY I HAVE ALSO USED POWER POINT TO SHOW MY PROJECT IN MORE PROFESSIONAL MANNER AND TO LOOK MORE ATTRACTIVE.

INSIGHTS

1.CALCULATE THE AVERAGE CALL TIME DURATION FOR ALL INCOMING CALLS RECEIVED BY AGENTS (IN EACH TIME-BUCKET).

Call_Status	(Multiple Items)
TIME BUCKET	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	196.9626009

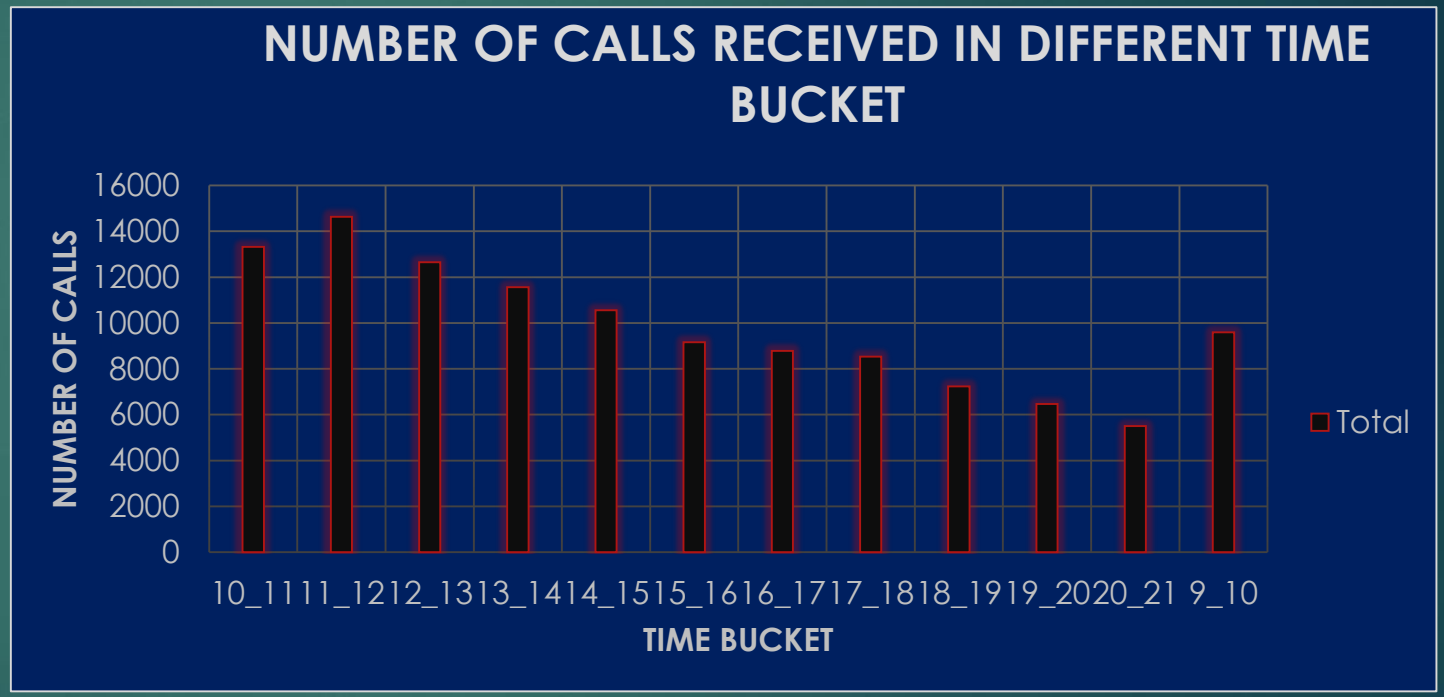


OUTPUT ARE AS FOLLOWS:

1. IN THE ABOVE PIVOT CHART AND PIVOT TABLE I HAVE SHOWN THE DATA OF AVERAGE CALL DURATION OF INCOMING CALL IN DIFFERENT TIME BUCKET AND ALSO USE FILTER IN WHICH I HAVE SHOWN ONLY ANSWERED AND TRANSFER CALL STATUS.
2. FROM THE ABOVE CHART AND TABLE IT IS CLEARLY VISIBLE THAT IN THE TIME BUCKET 10-11 THE AVERAGE CALL DURATION TIME IS MAXIMUM.
3. FROM THE ABOVE CHART AND TABLE IT IS CLEARLY VISIBLE THAT IN THE TIME BUCKET 12-13 THE AVERAGE CALL DURATION TIME IS MINIMUM.

2. NUMBER OF CALLS COMING IN EACH TIME BUCKET.

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

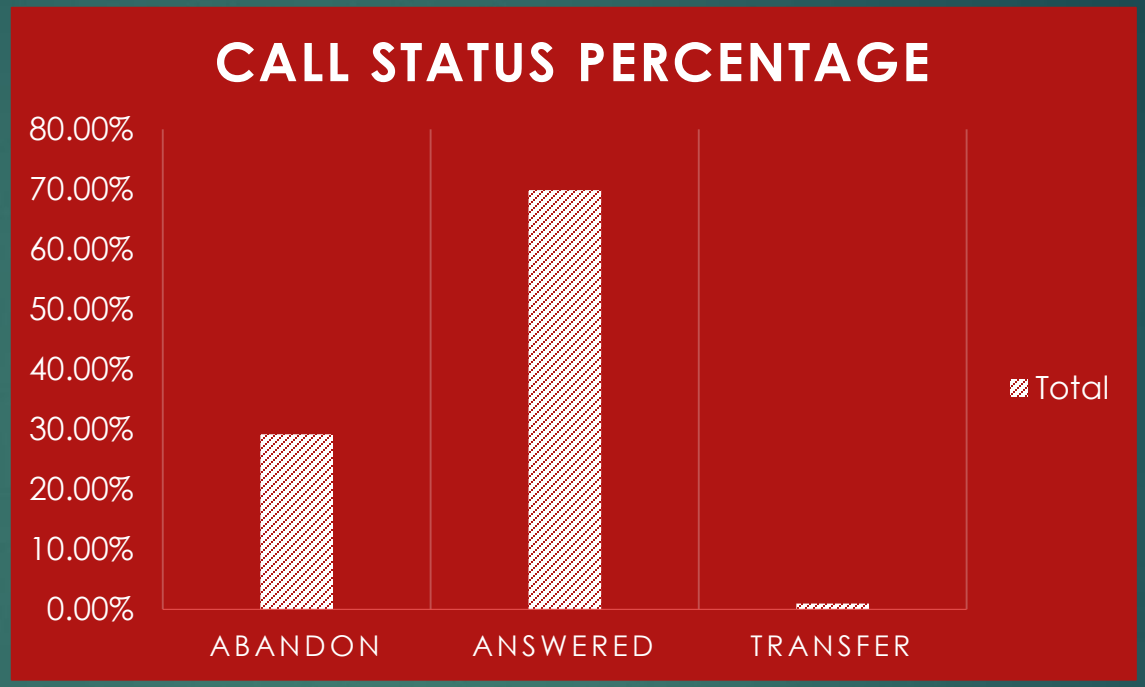


OUTPUT ARE AS FOLLOWS :

1. IN THE ABOVE PIVOT CHART AND PIVOT TABLE I HAVE SHOWN THE DATA OF NUMBER OF INCOMING CALL COMING IN EACH TIME BUCKET.
2. FROM THE ABOVE CHART AND TABLE IT IS CLEARLY VISIBLE THAT IN THE TIME BUCKET 11-12 THE NUMBER OF CALLS COMING IS MAXIMUM.
3. FROM THE ABOVE CHART AND TABLE IT IS CLEARLY VISIBLE THAT IN THE TIME BUCKET 20-21 THE NUMBER OF CALLS COMING IS MINIMUM.

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.)

CALL STATUS	PERCENTAGE
abandon	29.16%
answered	69.88%
transfer	0.96%
Grand Total	100.00%



FROM THE ABOVE PIVOT CHART AND TABLE I HAVE TRIED TO SHOWN THAT HOW MUCH IN PERCENTAGE OF INCOMING CALLS IS BEING ABONDAN,ANSWERED AND TRANSFER AND IT IS CLEARLY VISIBLE THAT NEARLY 70% OF THE CALL BEING ANSWERED.

DAYS	Sum of Call_Seconds (s)	SUM OF HOURS
01-Jan	676664	187.9622222
02-Jan	574003	159.4452778
03-Jan	812863	225.7952778
04-Jan	861946	239.4294444
05-Jan	846798	235.2216667
06-Jan	829040	230.2888889
07-Jan	757019	210.2830556
08-Jan	735444	204.29
09-Jan	541147	150.3186111
10-Jan	778739	216.3163889
11-Jan	785717	218.2547222
12-Jan	709934	197.2038889
13-Jan	691320	192.0333333
14-Jan	564227	156.7297222
15-Jan	556267	154.5186111
16-Jan	674394	187.3316667
17-Jan	945615	262.6708333
18-Jan	796768	221.3244444
19-Jan	750270	208.4083333
20-Jan	759613	211.0036111
21-Jan	639855	177.7375
22-Jan	621577	172.6602778
23-Jan	553899	153.8608333
Grand Total	16463119	4573.088611
	AVERAGE IN HOURS DURATION	198.8299396

1. FROM THE FOLLOWING PIVOT TABLE I HAVE SHOWN THE DATA OF AVERAGE IN HOUR DURATION OF CALLS IN EACH DAY.
2. HERE WE CAN SEE THAT AVERAGE IN HOURS DURATION OF CALLS COME IN EACH DAY IS NEARLY 199(HOURS)
3. THEN I SUPPOSE ON AN AVERAGE A SINGLE EMPLOYEE CAN WORK 4.5HR A DAY AS GIVEN IN QUESTION ASSUMPTION.
4. TOTAL HOUR = AVERAGE IN HOUR DURATION*90%/70%

FROM THE ABOVE EQUATION WE CAN SEE THAT THE ANSWERED RATE IS NEARLY 70% AND WE HAVE TO INCREASE IT BY 20% AND REDUCE THE ABONDAN RATE FROM 30% TO 10%.

TOTAL HOUR = 199%90%/70%

= 255.8571

NOW THROUGH QUESTION WE ASSUME THAT A MAN CAN WORK 4.5HR A DAY.

AGENT REQUIRED = 255.8571/4.5

= 57 AGENTS

time bucket	count of Call_Seconds	AGENT REQUIRED
10_11	11.28%	6
11_12	12.40%	7
12_13	10.72%	6
13_14	9.80%	6
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%	5
	TOTAL	57

1. FROM THE FOLLOWING PIVOT TABLE I HAVE SHOWN THE DATA OF NUMBER OF AGENT REQUIRED IN EACH TIME BUCKET.
2. AS IN THE SECOND COLUMN I HAVE CALCULATED THE COUNT OF CALL SECOND IN EACH TIME BUCKET IN PERCENTAGE.
3. AND FINALLY I MULTIPLIED EACH TIME BUCKET PERCENTAGE TO NUMBER OF AGENT REQUIRED TO GET HOW MUCH AGENT REQUIRED IN EACH TIME BUCKET SO THAT THE ABONDAN RATE WILL BE 10%.

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:

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
AVERAGE	1496	3585	49	5130

1. **FROM THE FOLLOWING PIVOT TABLE I HAVE SHOWN THAT ON EACH DAY HOW MUCH CALL COME IN DIFFERENT CALL STATUS AND AT LAST I HAVE ALSO SHOWN ON AN AVERAGE HOW MUCH CALL COMES IN EACH DAY(5130).**

2. **AVERAGE CALL BETWEEN(9AM-9PM)= 5130 CALLS**

3. **AVERAGE CALLS BETWEEN(9PM-9AM)= 30%5130=1539 CALLS (AS PER 100 CALLS 30 COMES AT NIGHT)**

4. **ADDITIONAL HOUR REQUIRED = ((AVERAGE IN HOUR DURATION FOR EACH DAY*AVERAGE CALL(9PM-9AM))/AVERAGE CALL(9AM-9PM))*90%/70%**

5. **AS WE HAVE MULTIPLE THE ABOVE EQUATION BY 90% TO REDUCE THE ABONDAN RATE TO 10% AND INCREASE THE ANSWERED RATE TO 90%.**

DAY	Sum of Call_Seconds (s)
01-Jan	676664
02-Jan	574003
03-Jan	812863
04-Jan	861946
05-Jan	846798
06-Jan	829040
07-Jan	757019
08-Jan	735444
09-Jan	541147
10-Jan	778739
11-Jan	785717
12-Jan	709934
13-Jan	691320
14-Jan	564227
15-Jan	556267
16-Jan	674394
17-Jan	945615
18-Jan	796768
19-Jan	750270
20-Jan	759613
21-Jan	639855
22-Jan	621577
23-Jan	553899
Grand Total	16463119
AVERAGE(IN SECOND)	715787.7826
AVERAGE(IN HOURS)	198.8299396

1. IN THE FOLLOWING PIVOT CHART I HAVE SHOWN AVERAGE OF CALL DURATION IN HOURS FOR EACH DAY(198.8299396).

2. THEREFORE ADDITIONAL HOUR REQUIRED

   = (198.82*1539/5130)*90%/70%

   = 76.69 HOURS

3. ADDITIONAL AGENT REQUIRED

   = 76.69/4.5

   = 17 AGENT(NEARLY)

*AS I HAVE DIVIDED MY ABOVE EQUATION BY BECAUSE I ASSUME THAT ON AN AVERAGE EACH EMPLOYEE CAN WORK 4.5 HR A DAY.

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

TIME BUCKET	CALL DISTRIBUTION	TIME DISTRIBUTION	AGENT REQUIRED
10_11	3	0.10	2
11_12	2	0.07	1
12_13	2	0.07	1
13_14	1	0.03	1
14_15	1	0.03	1
15_16	1	0.03	1
16_17	1	0.03	1
17_18	3	0.10	2
18_19	4	0.13	2
19_20	4	0.13	2
20_21	5	0.17	3
9_10	3	0.10	2
		TOTAL	17

- IN THE FOLLOWING PIVOT TABLE I HAVE SHOWN THE TIME BUCKET DISTRIBUTION,CALL DISTRIBUTION IN EACH TIME BUCKET(GIVEN IN THE DATASET AS SHOWN ABOVE) TIME DISTRIBUTION AND AGENT REQUIRED IN EACH TIME BUCKET.
- FIRSTLY I CALCULATED THE TIME DISTRIBUTION COLUMN AS IT FRACTION OF CALL DISTRIBUTION/TOTAL DISTRIBUTED CALLS(30).
- THEN I MULTIPLY EACH TIME DISTRIBUTION TO AGENT REQUIRED AND GET HOW MANY AGENT REQUIRED IN EACH TIME BUCKET.

RESULTS :

1. WHILE DOING THIS PROJECT I GOT TO KNOW HOW DATA/BUSINESS ANALYST WORK ON REAL TIME PROJECT.
2. I HAVE LEARNT HOW COMPANY DEALS WITH THE CUSTOMER TO GIVE THEM MOST SATISFIED OUTPUT.
3. I HAVE ALSO LEARNT THAT HOW TO INCREASE THE AGENT REQUIREMENT BY ANALYSING THE ABONDAN RATE PERCENTAGE.
4. AS THIS DATA SET WAS LONG IN TERM OF ROWS AND COLUMN SO FROM THIS PROJECT I HAVE LEARNT HOW TO WORK ON BIG DATA.

DRIVE LINK:
https://docs.google.com/spreadsheets/d/1PS6wiZEZWsO3JjekR5jqx83AnomvgbGp/edit?usp=share_link&ouid=104765947829469713812&rtpof=true&sd=true

THANK YOU