Call Centre Trend Analysis with Power BI

Data Analysis Report

Prepared by

Minila K M

Introduction

For firms to always thrive, it's critical to do analysis of it's business performance over a period of time. What such analysis does is to basically help finding out issues if there's any, help understand trends/performances and put up strategies to address such issues to help such firm to reach it's goal.

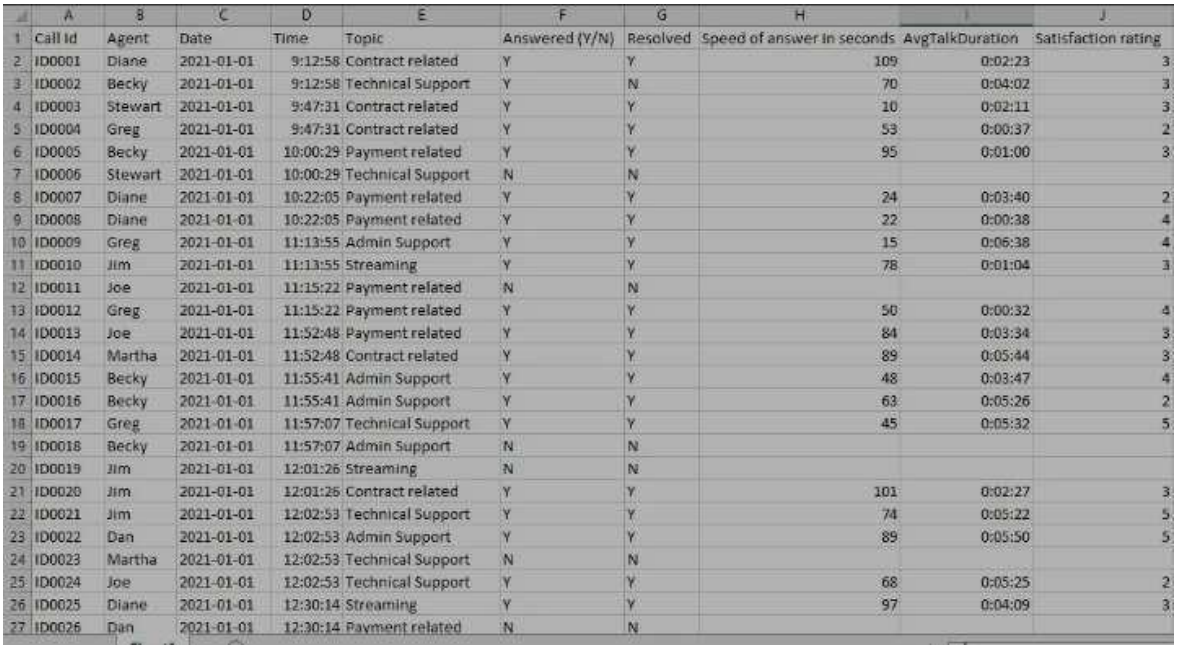
This analysis was done to find trends and insights using some visuals and understand the performance of this particular "Call Centre" for the first quarter of the year using some key performance indicators (KPI's).

Objective

To get an overview of long-term trend in customer and agent behaviour.

Data Preparation

We had a glance of the dataset using excel and we are able to find out that the data consists of 10 columns and 5001 rows with the column names as Call Id, Agent, Date, Time, Topic, Answered (Y/N), Resolved, Speed of answer in seconds, AvgTalkDuration and Satisfaction rating.
After taking a glance at the dataset, we moved to Power BI and connected to the dataset then did some cleaning and processing in the power query editor such as:

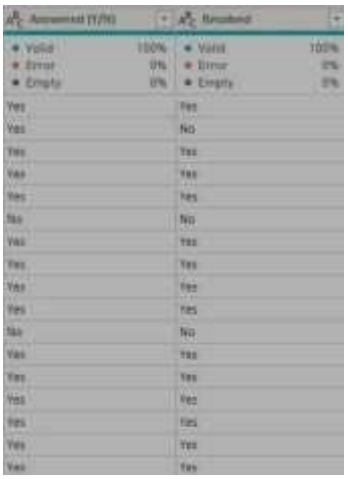


	A	B	C	D	E	F	G	H	I	J
1	Call Id	Agent	Date	Time	Topic	Answered (Y/N)	Resolved	Speed of answer in seconds	AvgTalkDuration	Satisfaction rating
2	ID0001	Diane	2021-01-01	9:12:58	Contract related	Y	Y	109	0:02:23	3
3	ID0002	Becky	2021-01-01	9:12:58	Technical Support	Y	N	70	0:04:02	3
4	ID0003	Stewart	2021-01-01	9:47:31	Contract related	Y	Y	10	0:02:11	3
5	ID0004	Greg	2021-01-01	9:47:31	Contract related	Y	Y	53	0:00:37	2
6	ID0005	Becky	2021-01-01	10:00:29	Payment related	Y	Y	95	0:01:00	3
7	ID0006	Stewart	2021-01-01	10:00:29	Technical Support	N	N			
8	ID0007	Diane	2021-01-01	10:22:05	Payment related	Y	Y	24	0:03:40	2
9	ID0008	Diane	2021-01-01	10:22:05	Payment related	Y	Y	22	0:00:38	4
10	ID0009	Greg	2021-01-01	11:13:55	Admin Support	Y	Y	15	0:06:38	4
11	ID0010	Jim	2021-01-01	11:13:55	Streaming	Y	Y	78	0:01:04	3
12	ID0011	Joe	2021-01-01	11:15:22	Payment related	N	N			
13	ID0012	Greg	2021-01-01	11:15:22	Payment related	Y	Y	50	0:00:32	4
14	ID0013	Joe	2021-01-01	11:52:48	Payment related	Y	Y	84	0:03:34	3
15	ID0014	Martha	2021-01-01	11:52:48	Contract related	Y	Y	89	0:05:44	3
16	ID0015	Becky	2021-01-01	11:55:41	Admin Support	Y	Y	48	0:03:47	4
17	ID0016	Becky	2021-01-01	11:55:41	Admin Support	Y	Y	63	0:05:26	2
18	ID0017	Greg	2021-01-01	11:57:07	Technical Support	Y	Y	45	0:05:32	5
19	ID0018	Becky	2021-01-01	11:57:07	Admin Support	N	N			
20	ID0019	Jim	2021-01-01	12:01:26	Streaming	N	N			
21	ID0020	Jim	2021-01-01	12:01:26	Contract related	Y	Y	101	0:02:27	3
22	ID0021	Jim	2021-01-01	12:02:53	Technical Support	Y	Y	74	0:05:22	5
23	ID0022	Dan	2021-01-01	12:02:53	Admin Support	Y	Y	89	0:05:50	5
24	ID0023	Martha	2021-01-01	12:02:53	Technical Support	N	N			
25	ID0024	Joe	2021-01-01	12:02:53	Technical Support	Y	Y	68	0:05:25	2
26	ID0025	Diane	2021-01-01	12:30:14	Streaming	Y	Y	97	0:04:09	3
27	ID0026	Dan	2021-01-01	12:30:14	Payment related	N	N			

- Replacing the null values in some columns with 0. Replacing null with 0 isn't the only way to treat null values but we chose to replace with 0 because there were no trends in those columns to say we want to follow existing trends neither do we have access to the stakeholders to give me an insights as to why those cells had null values hence, resolving to 0. we couldn't replace the AvgTalkDuration with 0 because it can't take any value that isn't in the time format.

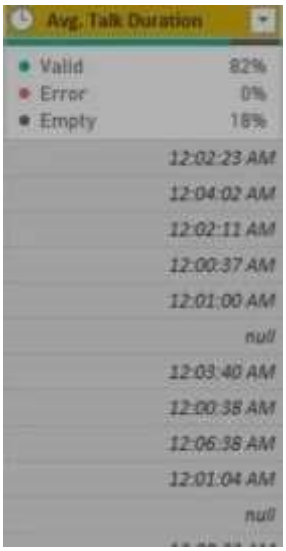
	Answered (Y/N)	Resolved	Speed of answer in seconds	AvgTalkDuration	Satisfaction rating
	Valid 100% Error 0% Empty 0%	Valid 100% Error 0% Empty 0%	Valid 82% Error 0% Empty 18%	Valid 82% Error 0% Empty 18%	Valid 82% Error 0% Empty 18%
1	Y	Y	109	12/31/1899 12:02:23 AM	3
2	Y	N	70	12/31/1899 12:04:02 AM	3
3	Y	Y	10	12/31/1899 12:02:11 AM	3
4	Y	Y	53	12/31/1899 12:00:37 AM	2
5	Y	Y	95	12/31/1899 12:01:00 AM	3
6	N	N	null	null	null
7	Y	Y	24	12/31/1899 12:03:40 AM	2
8	Y	Y	22	12/31/1899 12:00:38 AM	4
9	Y	Y	15	12/31/1899 12:06:38 AM	4
10	Y	Y	78	12/31/1899 12:01:04 AM	3
11	N	N	null	null	null
12	Y	Y	50	12/31/1899 12:00:52 AM	4
13	Y	Y	84	12/31/1899 12:03:34 AM	3
14	Y	Y	89	12/31/1899 12:05:44 AM	3
15	Y	Y	48	12/31/1899 12:03:47 AM	4
16	Y	Y	63	12/31/1899 12:05:26 AM	2
17	Y	Y	45	12/31/1899 12:05:32 AM	5
18	N	N	null	null	null
19	N	N	null	null	null
20	Y	Y	101	12/31/1899 12:02:27 AM	3
21	Y	Y	74	12/31/1899 12:05:22 AM	5
22	Y	Y	89	12/31/1899 12:05:50 AM	5

2. Changed the N and Y in Answered (Y/N) and Resolved to Yes and No which people could easily relate with.



3. The “AvgTalkDuration” column name was changed to “Avg. Talk Duration” and initially, the column consisted of both time and date but we

changed the data type to only time since it was talking about duration and it was on a particular day.

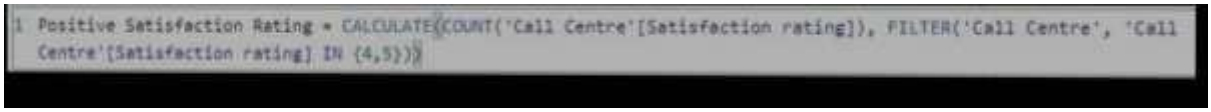


4. Just like the Avg. Talk Duration column, the time column also consisted of both time and date so we basically changed the data type to reflect the time only. After doing those cleaning and processing, the data looked cleaner to work with.

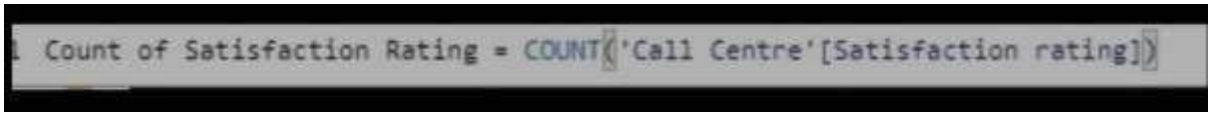
After closing the power query editor, we went ahead to create some measures with the aid if some DAX functions which was going to enable us

create the KPI's that were requested in the task and some of the measures created were:

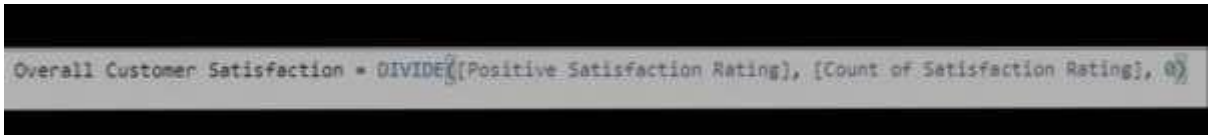
1. Positive Satisfaction Rating which were all ratings from 4 to 5.



2. Count of Satisfaction Rating which was done in order to individually count all the satisfaction ratings that were provided.

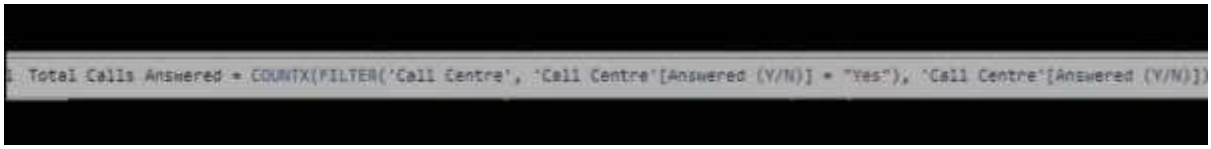


3. Overall Customer Satisfaction in Power BI can be calculated by using the Positive Satisfaction Rating and Count of Satisfaction Rating measures that were already created.



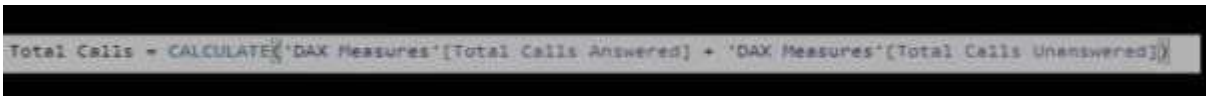
After creating the measure, we converted to percentage by just clicking on the percentage symbol in the formatting section

4. Total Calls answered which was created using the Answered (Y/N) column in order to view the total amount of calls that were answered.



5. Total Calls Unanswered which was also created using the Answered (Y/N) column to view the total amount of calls that were unanswered.

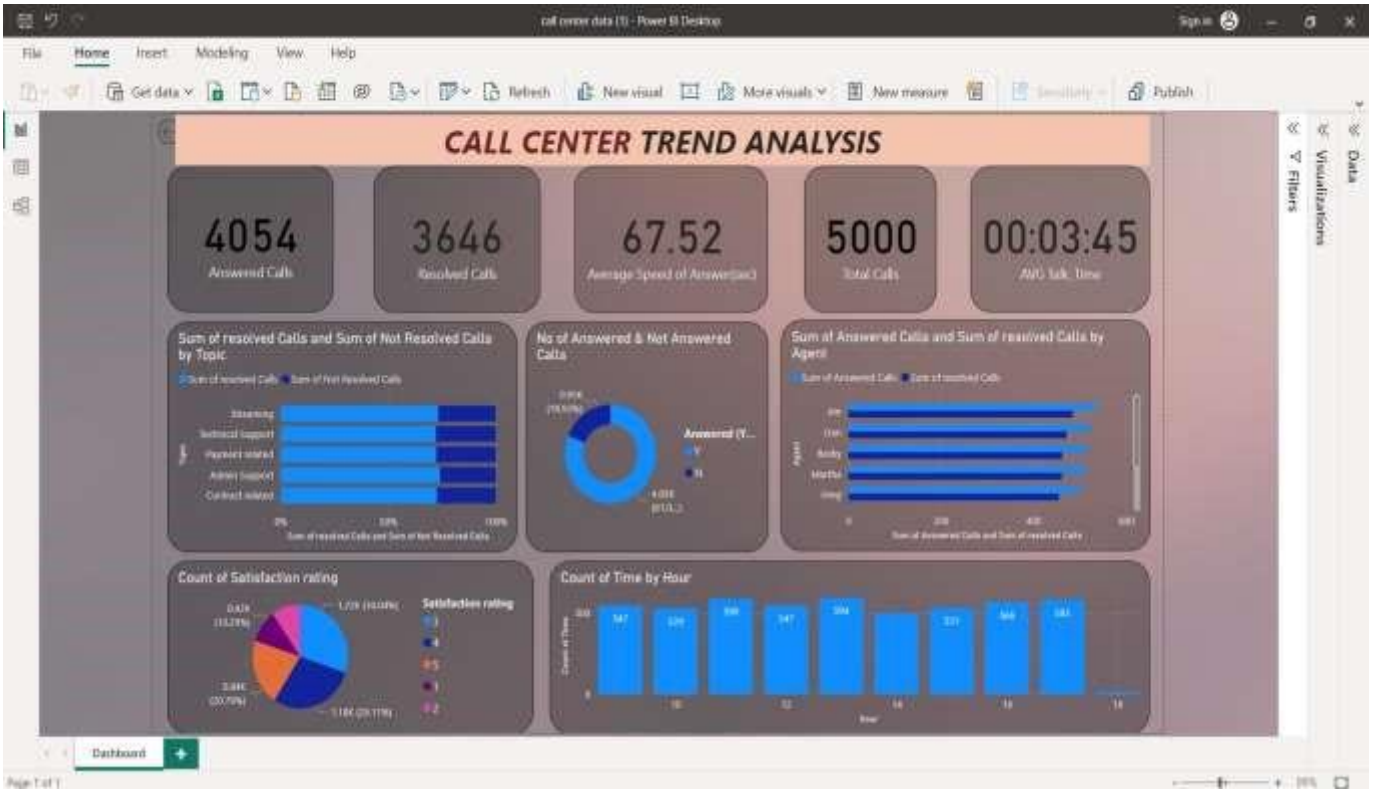
6. Then we create the total number of calls measures by just adding up total answered and unanswered calls together.



Data Visualization/Analysis

When performing a visualization task, we must build a dashboard that meets the needs of the stakeholders and the goals they want to achieve from the dashboard.

The dashboard's structure included certain cards to display some of the measures (Key Performance Indicators) that were created, as well as slicers to filter the charts to be displayed.



This is our Dashboard on Call Centre Trend Analysis.

Possible KPIs include:

- Overall Costumer Satisfaction
- Overall calls answered/abandoned
- Calls by time
- Average speed of answer

- Agents performance quadrant-> average handle time (talk duration) vs calls answered

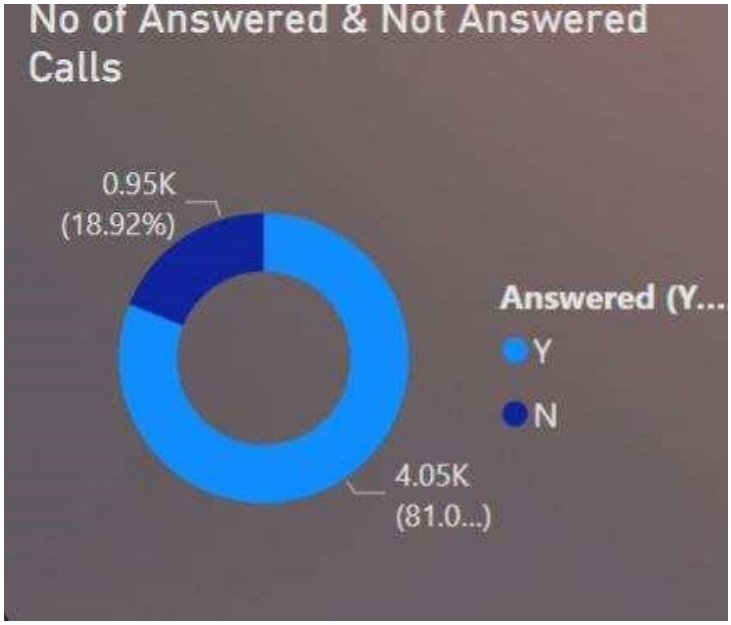
Here, we have a total of 5000 calls. Among them, 4054 are answered calls and 3646 were resolved calls. The average speed of answers in seconds is 67.52 and average talk time is 3.45 minutes.
In this dashboard, we are considering the following details:

1) Sum of resolved calls and sum of not resolved calls by Topic
2) Number of answered and not answered calls
3) Sum of answered calls and Sum of resolved calls by Agent
4) Count of Satisfaction rating
5) Count of time by hour

1) Sum of resolved calls & Sum of not resolved calls by Topic:

To represent Sum of resolved calls and sum of not resolved calls by Topic, we have used a horizontal bar graph. Here, we have considered five topics such as Streaming, Technical Support, Payment related, Admin support and Contact details. So, from the graph, we can see that Admin support(74.08%) has comparatively greater rate in sum of resolved calls. And Technical support(27.77%) has greater rate in sum of not resolved calls.

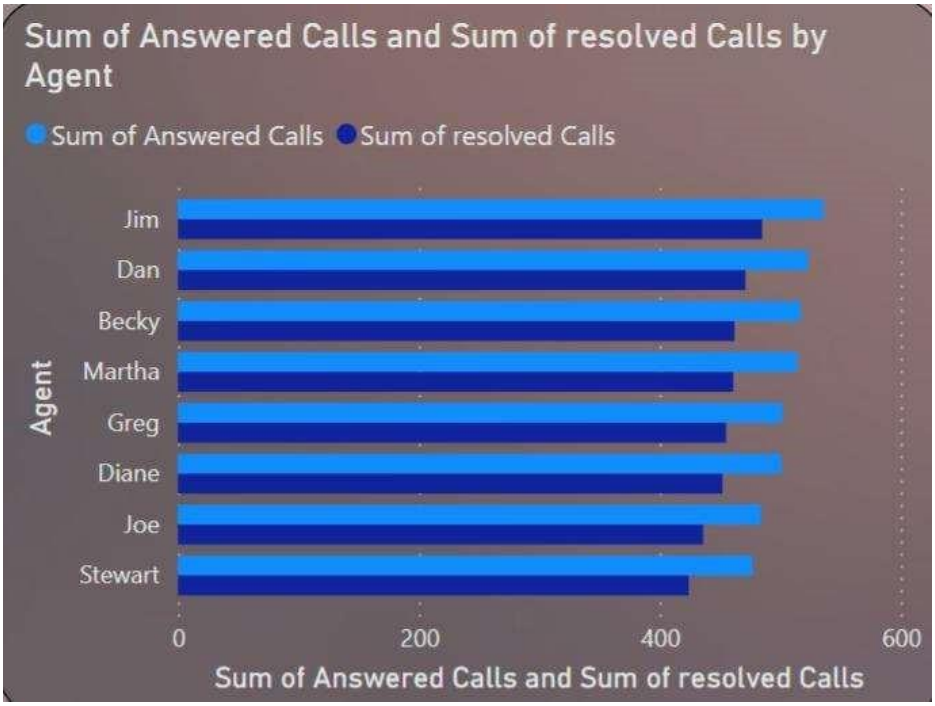
2) Number of answered and not answered calls:



To represent the rate of number of answered calls and not answered calls, we have used a doughnut chart which are used to show the proportions of categorical data, with the size of each piece representing the proportion of each category. Here, we use the answered calls as Y and not answered calls as N. Among 5000 calls,

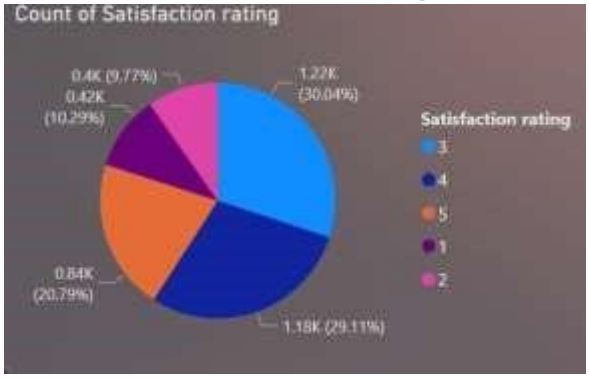
81.08% are answered calls and 18.92% are not answered calls.

3) Sum of answered calls and Sum of resolved calls by Agents:



To represent the Sum of answered calls and Sum of resolved calls by Agents, we have used a multiple bar chart. A Multiple bar chart is also called as a Grouped Bar Chart which are generally used for comparing different entities. Here, we are considering 8 agents; Becky, Dan, Diane, Greg, Jim, Joe, Martha and Stewart. Jim has a greater rate in sum of answered calls(536) and sum of resolved calls when compared to others.

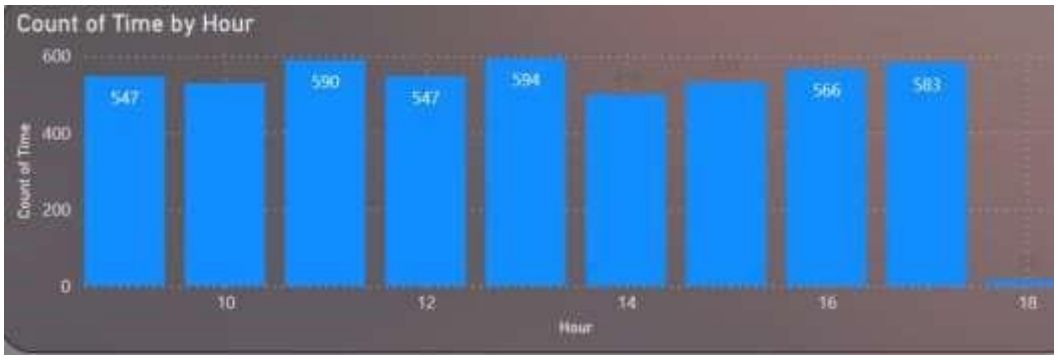
4) Count of Satisfaction Rating:



To represent the Count of Satisfaction Rating, we have used a Pie Chart, which is a way of summarizing a set of nominal data or displaying the different values of a given variables. This types of chart is a circle divided into a series of segments. Each segment

represents a particular category. So, from the Pie chart , we have most rating is in between an average and good, ie; almost 30.04% have rated average and 29.11% have rated good. That means it needs some improvement.

5) Count of Time by Hour:



To represent the Count of Time by Hour, we use a vertical Bar Chart. A Bar Chart or Bar Graph is a chart or graph that presents categorical data with rectangular bars with heights or lengths proportional to the values that they represent. A Bar Graph shows comparisons among discrete categories. Here, we are considering the time from 9AM to 5PM. So, from the graph, we can see that between 11AM and 1PM ,we have comparatively high rate of calls.

Conclusion

A strong call centre is the backbone of a company. After all, customers often make purchase decisions based on how well-treated they feel – regardless of how great the product is. We can guarantee the great treatment by providing the best agents. Without skilled and highperforming agents, you risk losing clients, your reputation, and your revenue. To be successful, call centres need to boost agent

performance. We can use the following methods to boost agents productivity.

- Empower your agent with a best technology

  Even the most motivated and efficient agents are less productive if they use outdated or complicated IT systems and processes. If the learning curve is steep, or the technology is simply too slow and misses essential features, your agents won't be able to get into the flow that they need for optimal performance. So Switch to a modern-day, cloud-based call centre software that they can be productive with, even if they work from home.

- Create detailed call scripts

  With a well-written call script, your agents have all the information in front of them: What to say, who the client is, what some common objections might be, and links to further resources. It's certainly a game changer for sales teams, but even customer support teams can highly benefit from them.

- Use Skill-Based Routing and IVR to segment customers

  IVR (interactive voice response) is a valuable tool that gathers information about callers before they are connected with the agent. Let's say you get an incoming call from a phone number that starts with +44 and one that starts with +52. If the feature is set up, the first call would automatically go to an English-speaking agent and the second call would go to a Spanish-speaking one. This is also known as skill-based routing. Having skill-based routing and an IVR flow saves you tremendous amounts of time and makes your agent more efficient.

- Re-examine your metrics and KPIs to make data-driven changes

  Make sure your goals are clear and that all agents know why and how that metric is measured. When selecting the right call centre software, make sure it can provide you with statistics and real-time data that you can use to uncover problems that hinder agent performance. Call centre managers should review the data regularly and make necessary changes.

- Implement continuous training for agents at every level

  Training shouldn't end with the on boarding process. Your longterm agents also need continuous training to refresh their existing knowledge, understand all updates about the product, and improve the skills that make them great at their job. The lack of opportunities for continuous learning and growth can leave most of your agents feeling demotivated, and your customers will also notice the less-than-stellar performance when they're asking about a new trend or feature

- Offer two-way feedback sessions regularly

  Many studies have shown that the majority of employees want to get feedback at least once a month. In fact, the lack of feedback tends to make call centre agents feel disengaged from their work. And offering negative and positive feedback is equally important. Offering such regular, open and punishment-free space will boost morale and agent performance.

As you can see, a high-performing agent is also a happy one. Feeling motivated and inspired by one's job, and having the right technology to get into the flow state is crucial to doing an exceptional job.

If you want to help your agents be more efficient, don't forget to create an environment in which they enjoy working. Ready to boost performance with modern-day technology that enables productive remote work

Reference

- https://www.theforage.com/
- https://www.invoca.com/
- https://www.youtube.com/watch?v=DGJDRtewk1A