

CUSTOMER CARE CENTRE ANALYSIS

“SUMMER INTERNSHIP” – A PROJECT REPORT

Submitted by

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MAY – 2023**

SRI RAMAKRISHNA COLLEGE OF ARTS & SCIENCE

BONAFIDE CERTIFICATE

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TO WHOMSOEVER IT MAY CONCERN

This is to certify that **PAVITHRA.S** (REG NO: 22127036) pursuing B.Sc., Computer Science with Data Analytics at Sri Ramakrishna College of Arts & Science has undergone summer internship in our firm for 10 Days from 01/06/2023 to 10/06/2023.

During the internship, she showed interest in learning new things and exhibited good conduct and behavior throughout the period.

K. Prasad S
12/6/23

Karthi Prasad S
Founder & CEO

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CHAPTER 1

INTRODUCTION TO DATA ANALYTICS

This chapter deals with the contents of data, data analysis and data analytics along with approaches, steps and applications of data analytics.

1.1 Data Analytics vs Analysis

Data refers to basic facts and figures. It is generally raw pieces of information that simply includes basic numbers or text. Data Analytics is a process for translating basic facts and figures into specific actions by examining raw data. The purpose is to help people and businesses make better decisions and achieve greater success. Data Analysis refers to the process of cleaning, manipulating and questioning data to find relevant information. It is a vital part of data analytics. The below table 1.1 shows the differences between data analytics and analysis. [Ref.1,2,3,4].

DATA ANALYTICS	DATA ANALYSIS
➤ Data analytics is a traditional type of analytics used in enterprises to make data-driven decisions.	➤ Data analysis is a specialized type of analytics used in businesses to evaluate data and gain insights.
➤ It consists of stages like data collecting and business data inspection.	➤ To process data, raw data must first be defined in a meaningful way before relevant information can be recovered from it through data cleaning and conversion.
➤ It consists of processes like data collection and inspection.	➤ It consists of processes like defining the data, cleaning and altering it.
➤ It is used in Python, Excel etc.	➤ It is used in SPARK, Excel etc
➤ Unknown relations can be found.	➤ Unknown relations cannot be found.

Table 1.1(Data Analytics vs Data Analysis)

The customer care data is processed using excel. There processes like cleaning the data, removing duplicates can be done. This is data analysis. After the raw data is cleaned it can be processed deeply to get useful information. Here, Pivot table is used to analyse the data. Charts and graphs can make it understand better. This way of deep analysing is data analytics.

1.2 Approaches of data analytics

There are several approaches to data analytics, they are:

- a) **Descriptive Analytics:** This approach involves analysing past data to identify patterns, trends, and relationships. Descriptive analytics provides insights into what has happened in the past and is used to summarize and describe historical data.

EG: Patient data can be summarized to identify common health issues.

For example, most of the people get the flu from October to June.

- b) **Diagnostic Analytics:** It is used to identify the root cause of a problem or issue.

EG: In case of cyber threat, it is used to identify the source of a security breach and prevent future attacks.

- c) **Predictive Analytics:** It involves using statistical models and algorithms to predict future trends and to identify opportunities and risks.

EG: In healthcare, predictive analytics can be used to identify patients at risk of developing a particular disease.

- d) **Prescriptive Analytics:** This approach involves using algorithms to identify the best course of action to take based on the predicted outcomes of different scenarios.

EG: Using google maps for directions during peak hours. [Ref.5]

Each of these approaches has its own strengths and weaknesses, and the choice of approach depends on the specific business problem or question being addressed. By combining these approaches, organizations can gain a more comprehensive understanding of their data and makes more informed decisions.

The customer care data comprises of descriptive and predictive (statistical) analysis. The data set is given and insights are taken to the data present is descriptive. Prediction of something that is going to happen in future based on the average is predictive analysis.

1.3 Steps of Data Analytics

The steps of data analytics can vary depending on the specific problem or question being addressed, but generally, the process involves the following steps:

- a) **Defining the question:** The first step in any data analytics process is to define the objective. In data analytics jargon, this is sometimes called the 'problem statement'. Defining the objective means coming up with a hypothesis and figuring out how to test it.
- b) **Collecting the data:** After defining objective next step is to collect and segregate data. The data might be quantitative (numeric) data like sales figures or qualitative (descriptive) data like customer reviews. All data fit into one of the three categories;
 - **First party data:** The data that is directly collected from customers by us or the company. EG: Customer satisfaction surveys.
 - **Second party data:** It is the primary data of other organizations. This might be available directly from the company or through a private marketplace. EG: Website, App.
 - **Third party data:** The data that has been collected and aggregated from numerous sources by a third-party organization. EG: Gartner.
- c) **Cleaning the data:** This can be done by removing major errors, duplicates, outliers and removing unwanted data points. Then bringing a structure to the data and filling the major gaps.
- d) **Analysing the data:** It can be done through descriptive, diagnostic, predictive and prescriptive analysis.
- e) **Sharing your results:** The final step of data analytics is to share the insights with the world. The insights must be 100% clear and unambiguous along with the evidence. Honest communication is the most important part of the process.
- f) **Embracing failures:** The last step is to embrace failures. Data analysis is inherently chaotic, and mistakes occur. So, embracing failure is often the critical first step on the road to success.
- g) **Summary:** Till this all the main steps of the data analytics process. These core steps can be amended, reordered and reused accordingly. [Ref.6]

1.4 Applications of Data Analytics

Some of the real time applications of data analytics are:

- Customer care centre:

Analytics in customer care centre helps agents improve their performance by providing objective, insights into their customer interactions.

Analytics helps in sales increase by identifying patterns in customer behaviour and providing agents with the information they need to engage with callers on a more personal-level and maintain high rates as result.

It helps in increasing customer's satisfaction and track agents process in real time.

- Security – It uses data analytics to identify previous, ongoing and future occurrences of crime or security attacks.
- Risk Management – It is a major concern of insurance sector. Data analytics provides insurance firms with information on claims data, actuarial data, and risk data.
- Customer Interactions – It is about insurance. Different populations prefer different modes of communication. Using demographic data and feedback, insurers may improve customer experience based on customer behaviour and insights.
- Education – To improve curriculum data can be collected from students and those data help in improving resource allocation and long-term management decisions.
- Marketing and data advertising – Marketers employ data analytics to understand their customers and increase conversation rates. Ad specialists employ analytics to learn about the audience's interests, dislikes, age, gender etc. To achieve high conversation rates, professionals use data analytics to uncover patterns and provide content for long-term engagement.
- Travel – Data analytics here can observe data from social media to demonstrate the desires and preferences of different customers. [Ref.7]

CHAPTER 2

OVERVIEW OF THE PROBLEM

This chapter tells about the study of the problem, the challenges that were faced while analysing the study and the hardware and software requirements that are required to solve the study effectively.

2.1 Problem Study – Customer care data

Analysing the customer care centre data of the month October 2020. A customer care centre is a team of customer service specialists who takes phone calls from customers and help them solve their inquiries. People working in a customer care centre are called as Customer Service Representative (CSR). A CSR is a person who handles incoming or outgoing customer calls in the organization. There are some responsibilities of a CSR like;

- Manage inbound and outbound calls
- Identify customer needs and answer accordingly
- Improve customer satisfaction
- Build a positive relationship during interactions etc.

Customer care centre working:

First a customer makes a call and the interaction begins. They can make call directly to the care centre or through a connected app or product. Once the customer contacts the call centre they are prompted by interactive voice response (IVR). This system can route the customers to the correct agent, provide recorded responses to the questions asked, it allows callers to switch from a live call to a text message. After the customer is routed to the correct agent, the correspondent agent identifies the details about the customer before solving their issue. After this they will ask about the issues that the customers are facing. Throughout the interaction they must keep a good attitude and follow the call centre etiquette to make the customer feel valued, satisfied and to end up the interaction in a positive way. Sometimes an agent might unable to solve the problem in one call. In that case they will follow up with more information. If the problem is solved in one call then they can ask the customers for a customer satisfaction survey. Through this survey feedback can be gained and it helps greatly in business and can gain a credit point for the agent also. [Ref.8].

The main study on the data is studying about the sentiments, satisfaction level, channel of calling, the main reason of the call of the customers towards the customer care centre.

2.2 Challenges of the study

Working as a Customer Service Representative (CSR) has many risks. Each customer will be different not all the customers will be with a good attitude. In that case it entirely depends on the skills of the representative on how they tackle the problem and end it in a positive way which is entirely challenging.

CHALLENGES: The main challenge that was faced during the study revolves around the cleaning and altering of data in a huge data set. While receiving the raw data set it was noticed that the category of the columns is different for example a date column was under a general category etc. So, analysing each column was a bit challenging but it's interesting to do. It helps in gaining more and new knowledge.

OBJECTIVES:

- Identify the call day analysis on daily basis of October month.
- Find the channel that people prefer to contact the most.
- Find the state that holds highest number of enquiries.
- Find the reason that people contact the most.
- Identify the category in which the people interact the most in accordance with SLA.
- Identify which call centre gets more calls.
- To find the highest sentiment in accordance with response time.
- Identify which channel has highest records in accordance with sentiment.
- Forecast sheet Analysis on call duration in minutes.

2.3 Hardware and Software Requirements

HARDWARE:

The system used in this project is Windows 11. It has 11th Gen Intel(R) Core (TM) i3-1115G4 @ 3.00GHz 3.00 GHz processor with 8.00GB RAM and 64-bit operating system, x64-based processor system type.

SOFTWARE:

The software used in this summer internship project is Microsoft Office Excel which is a 2016 version and the analysis is done using pivot table and forecast sheet.

Pivot table is used for analysis both descriptive, statistical as well as combination of both. It is an interactive way to quickly summarize large amounts of data.

Pivot charts are also used for graphical diagrams.

A forecast sheet is used to predict a future value by using the historical data that is currently present.

MS EXCEL USES:

The Excel is used to clean, filter and analyse large data sets. It has many features to analyse and classify the data into various segments. It is very helpful for various businesses and decision making.

CHAPTER 3

DATA PREPARATION

This chapter deals with the topics of how the data collection is done, by approaching where the data had been collected followed by data method which explain about EDA that is Exploratory Data Analysis and it contains the information about the methods that are used in descriptive and statistical analysis. At last it contains information about the purpose of the data.

3.1 Data Collection – Customer care data

The data is analysed for the month of October 2020. After analysing the data, it is found that the data consists of customer care records of US. The data set comprises of 12 columns and 32, 942 rows (including header). This data set consists of 9 descriptive columns, 2 numeric (numbered) columns and 1 date column.

The data set is collected by approaching the Deep space technology which is a start-up company which is located at Gandhi Nagar, Tirupur. It has domains at website development, website apps. The data set had been taken from the website ‘<https://medium.com/@Armonia1999/data-analysis-project-excel-dashboard-10c6160f2dbe>’ which is provided by the company. The data set comprises of the following fields;

3.1.1 Field Definitions:

- ID - This column represents the ids of all customers.
- CUSTOMER_NAME- Customer_name column has the names of the customers.
- SENTIMENT - This column gives information about the type of sentimental interactions that the customer had.
- CSAT_SCORE - This column is about customer satisfaction score.
- CALL_TIMESTAMP - This column has the dates of October in it.
- REASON - It represents the reasons of people calling to the customer centre.
- CITY - It represents the city from where the people has called.
- STATE - It represents the state from which people had called.
- CHANNEL - This column tells about the channel (medium) that people used to contact.
- RESPONSE_TIME - It gives information about the people regarding SLA (Service Level Agreement).

- **CALL DURATION IN MINUTES** - It has the details of each customers call duration timings in minutes.
- **CALL CENTRE** - This column gives information about which place the call centres are located.

3.2 Data Method

Exploratory data analysis (EDA) is used by data scientists to analyse and investigate data sets and summarize their main characteristics, often employing data visualization methods. It helps determine how best to manipulate data sources to get the answers you need, making it easier for data scientists to discover patterns, spot anomalies, test a hypothesis, or check assumptions.

The main purpose of EDA is to help look at data before making any assumptions. It can help identify obvious errors, as well as better understand patterns within the data, detect outliers or anomalous events.

Types of exploratory data analysis:

- **Univariate non-graphical** – It is a simplest form of data analysis, where the data being analysed consists of just one variable. It doesn't deal with causes or relationships as it is a single variable. The main purpose is to describe the data and find patterns that exist with it.
- **Univariate graphical** – Non-graphical methods don't provide a full picture of the data. In such cases graphical methods are required. Graphical like histograms and box plots can be used.
- **Multivariate nongraphical** – It arises from more than one variable. It generally shows the relationship between two or more variables of the data through statistics.
- **Multivariate graphical** – It uses graphics to display relationships between two or more sets of data. [Ref.9]

In this data set the pivot table, pivot charts (from insert) and forecast sheet (from data) is used for analysing. Pivot table was created by Pito Salas in 1986. This concept came from Lotus Software (Lotus Development Corporation). This data set falls under Multivariate nongraphical (forecast sheet) and Univariate graphical (all the other analysis falls under this category). [Ref.10].

3.3 Purpose of Data

In today's global market place, many companies have turned to a customer care centre model to assist, streamline and maximise customer services and sales needs at scale. With one eye focused on providing excellent support and the other on efficiency, an ideal call centre needs to strike that perfect balance of care and resources. The main purpose of the customer care centre data set is to find the highest day that received calls, the channel that receives most calls, the state from which most calls are enquired, major reason for calling, response time category under which people fall, the customer centre that received most inquiries, sentiment of interaction and their satisfaction level within the response time, the channel which people contact the most along with the sentiments can be found. A forecast sheet can be done for numeric columns. Here, call duration in minutes is a numeric column without any null values. So, forecast sheet can be done for call duration in minutes and values can be predicted using its average.

CHAPTER 4

METHODOLOGY

This chapter contains details about the descriptive and statistical analysis and the methods used for those analysis. In descriptive analysis pivot table method is used and in statistical analysis forecast sheet method is used which is in data tab. For descriptive analysis the diagrams are represented in the form of Input, Processing and Output.

4.1 Descriptive Analysis and method

It focuses on describing the visible characteristics of a dataset.

METHODS:

4.1.1 ID vs CALL DAY ANALYSIS:

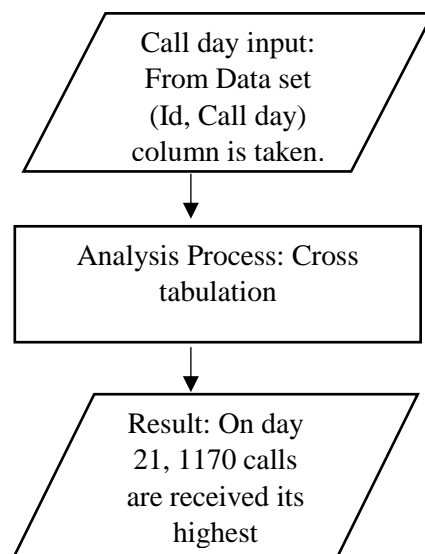


Fig 4.1.1(Call day analysis)

STEP 01: The columns Id and Call day are taken as input.

STEP 02: The columns are processed and analysed using Cross tabulation (pivot) table.

STEP 03: Pivot table has many names such as cross tabulation, data summarization table, multidimensional analysis table, summary table, dynamic table, tabular analysis tool, spreadsheet analysis tool etc.

STEP 04: From the analysis it is found that on day 21, 1170 calls were received and it is the highest number of calls received.

4.1.2 ID vs CHANNEL ANALYSIS:

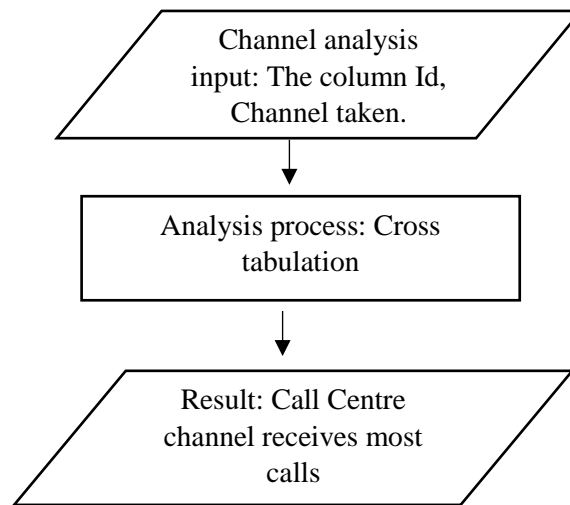


Fig 4.1.2(Channel Analysis)

STEP 01: The columns Id and Channel are taken as input.

STEP 02: The cross-tabulation table (pivot table) is used for analysis.

STEP 03: After processing, it is found that the call centre channel receives most calls.

4.1.3 ID vs STATE ANALYSIS:

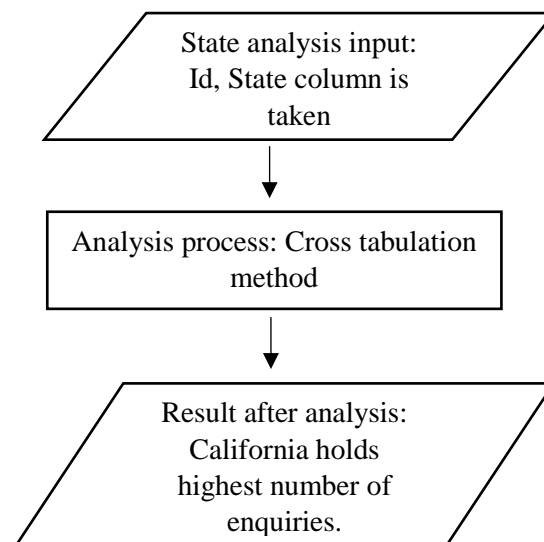


Fig 4.1.3(State analysis)

STEP 01: The columns Id and State are selected for the analysis.

STEP 02: The cross tabulation (pivot table) is used for analysis.

STEP 03: After processing, it is found that California holds the highest number of enquiries.

4.1.4 ID vs REASON ANALYSIS:

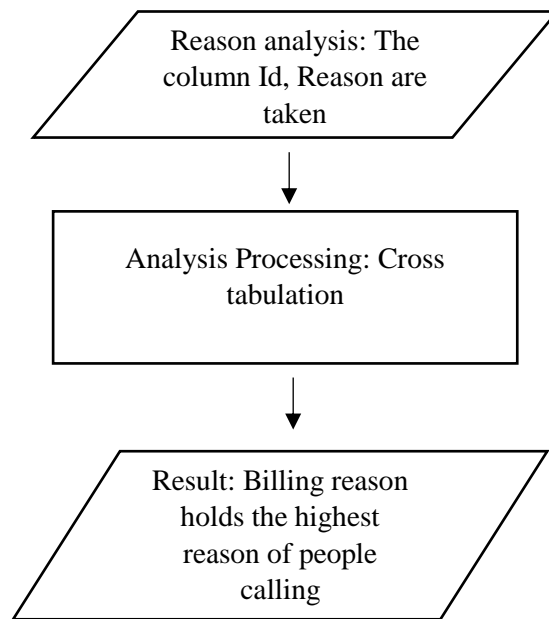


Fig 4.1.4(Reason analysis)

STEP 01: The columns that are selected are Id and Reason.

STEP 02: The cross tabulation (pivot table) is used for analysis.

STEP 03: After processing, the main reason why people called are of billing question.

4.1.5 ID vs RESPONSE TIME ANALYSIS:

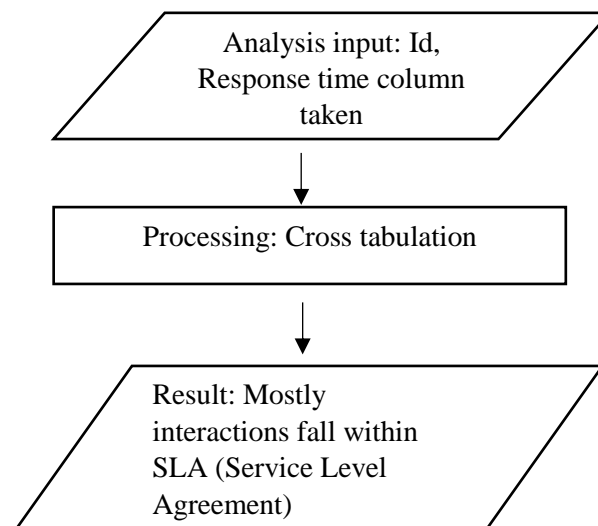


Fig 4.1.5(Response time analysis)

STEP 01: Select the columns Id and Response time.

STEP 02: The analysis is done using cross tabulation (pivot table).

STEP 03: After processing, the output states that mostly interactions fall within SLA (Service Level Agreement).

4.1.6 CALL CENTRE IN CITIES ANALYSIS:

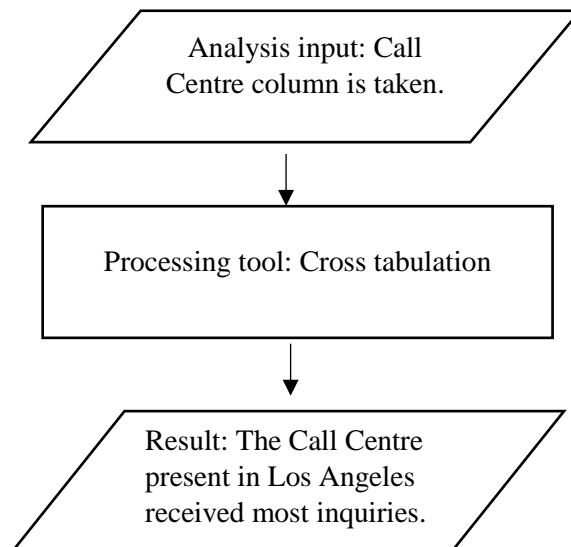


Fig 4.1.6(Call centre analysis)

STEP 01: Select the call centre column.

STEP 02: The analysis is done using Cross tabulation (pivot table).

STEP 03: After processing, it is found that call centres present in Los Angeles received most inquiries.

4.1.7 SENTIMENT vs RESPONSE TIME ANALYSIS:

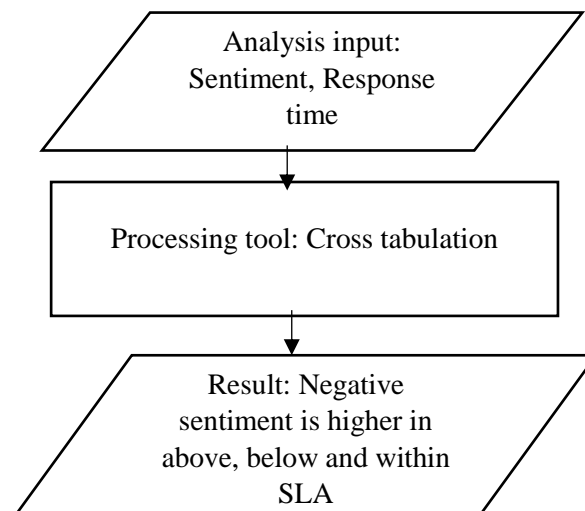


Fig 4.1.7(Sentiment, Response time analysis)

STEP 01: Select columns Sentiment and Response time as input.

STEP 02: The analysis is done using Cross tabulation (pivot table).

STEP 03: From the analysis, it is found that the negative sentiment from the customers are higher in above, below and within SLA.

4.1.8 SENTIMENT vs CHANNEL ANALYSIS:

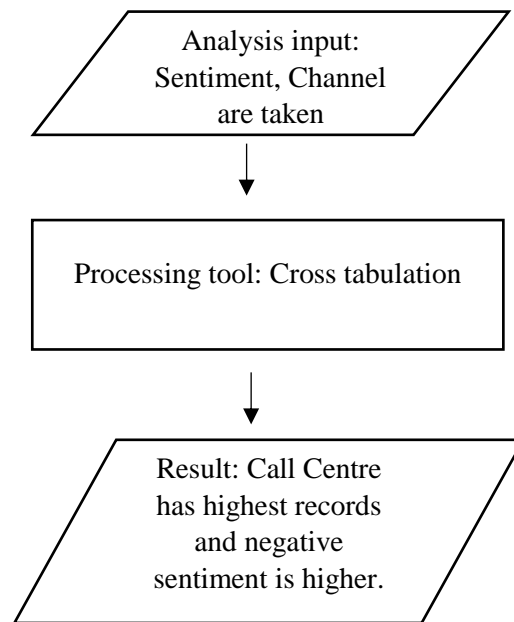


Fig 4.1.8(Sentiment, Channel analysis)

STEP 01: The column Sentiment and Channel are taken as input.

STEP 02: For analysis, cross tabulation (pivot table) is used.

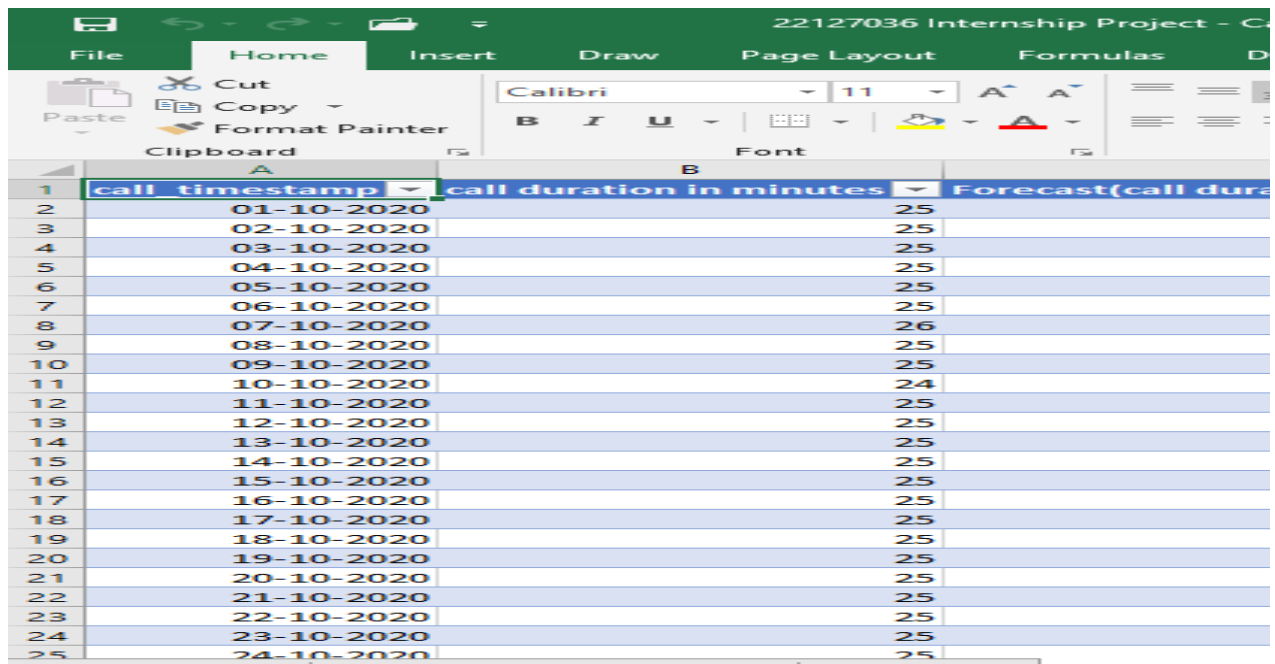
STEP 03: From the analysis above, it is found that call centres has the highest records and negative sentiment are higher.

4.2 Statistical Analysis Method – Forecasting

It focuses on making predictions on a larger data set based on a sample of those data.

From the data of Call timestamp and Call duration in minutes of October 2020 the data of the next 8 days that is, from 01/11/2020 to 08/11/2020 the call duration in minutes is predicted using forecast sheet from data tab.

STEP 01: The data of call duration in minutes is taken.



The screenshot shows an Excel spreadsheet with the following data:

	call timestamp	call duration in minutes	Forecast(call dura
2	01-10-2020	25	
3	02-10-2020	25	
4	03-10-2020	25	
5	04-10-2020	25	
6	05-10-2020	25	
7	06-10-2020	25	
8	07-10-2020	26	
9	08-10-2020	25	
10	09-10-2020	25	
11	10-10-2020	24	
12	11-10-2020	25	
13	12-10-2020	25	
14	13-10-2020	25	
15	14-10-2020	25	
16	15-10-2020	25	
17	16-10-2020	25	
18	17-10-2020	25	
19	18-10-2020	25	
20	19-10-2020	25	
21	20-10-2020	25	
22	21-10-2020	25	
23	22-10-2020	25	
24	23-10-2020	25	
25	24-10-2020	25	

Fig 4.2(a) Call duration in minutes

STEP 02: It is processed using forecasting sheet which is in data tab.

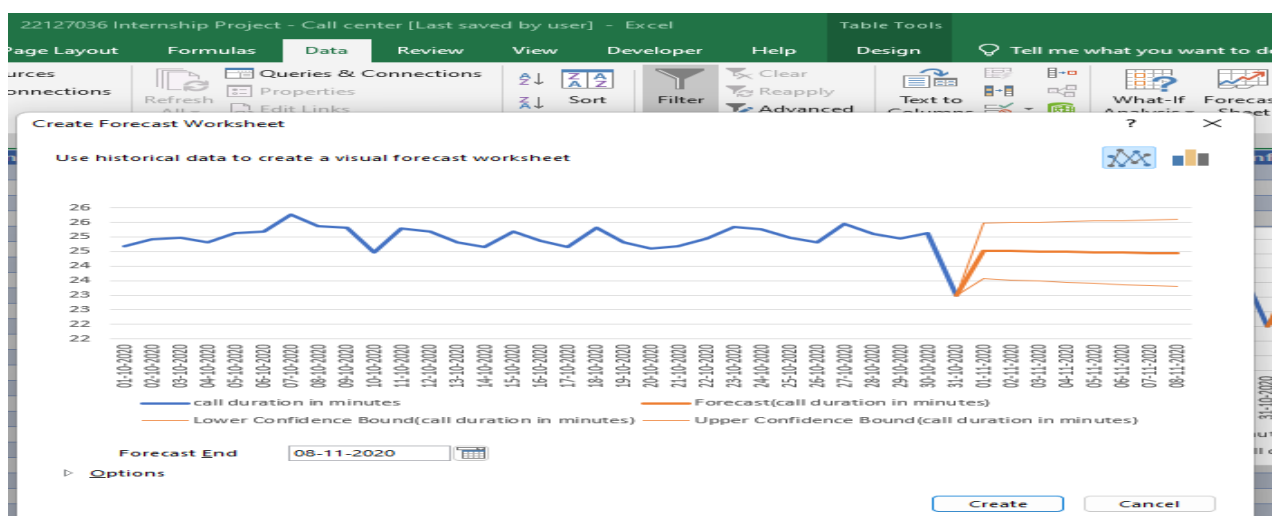


Fig 4.2(b) Forecast sheet

STEP 03: The output found is that call duration in minutes is found for the first 8 days of September 2020 using the average of call duration in minutes.

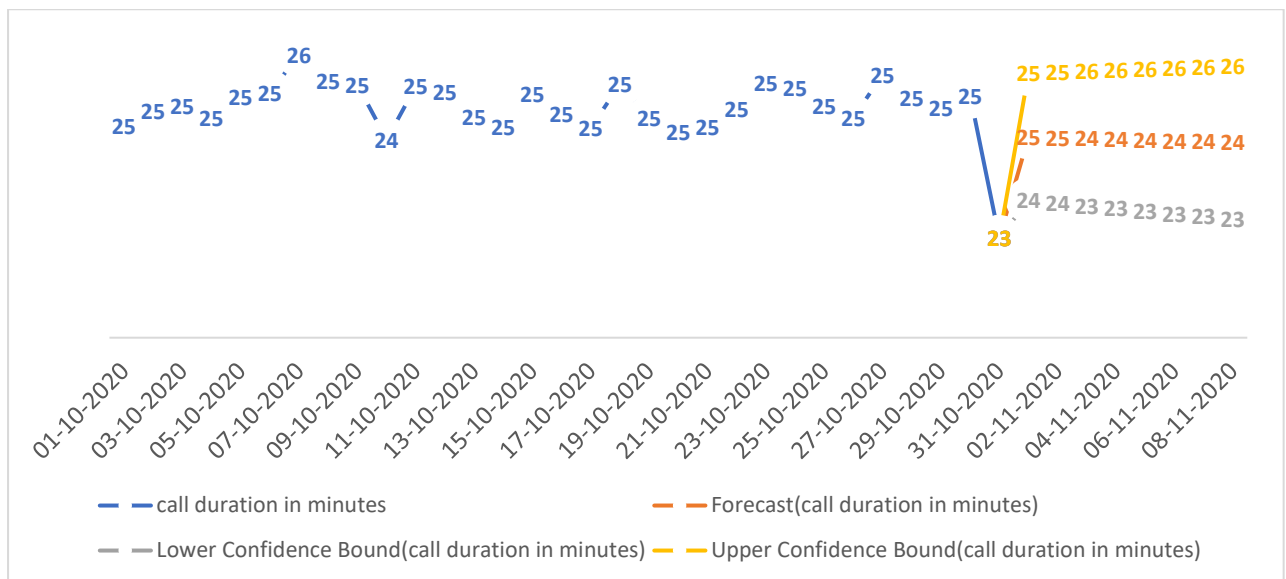


Fig 4.2(c) Output of forecast sheet

CHAPTER 5

RESULTS, FINDING INSIGHTS AND DISCUSSION

This chapter contains the results that are found from the analysis along with the picture of the pivot charts. The insights from the analysis are mention inside a text box.

5.1 Analysed based on how many ids called in each day on the month October:

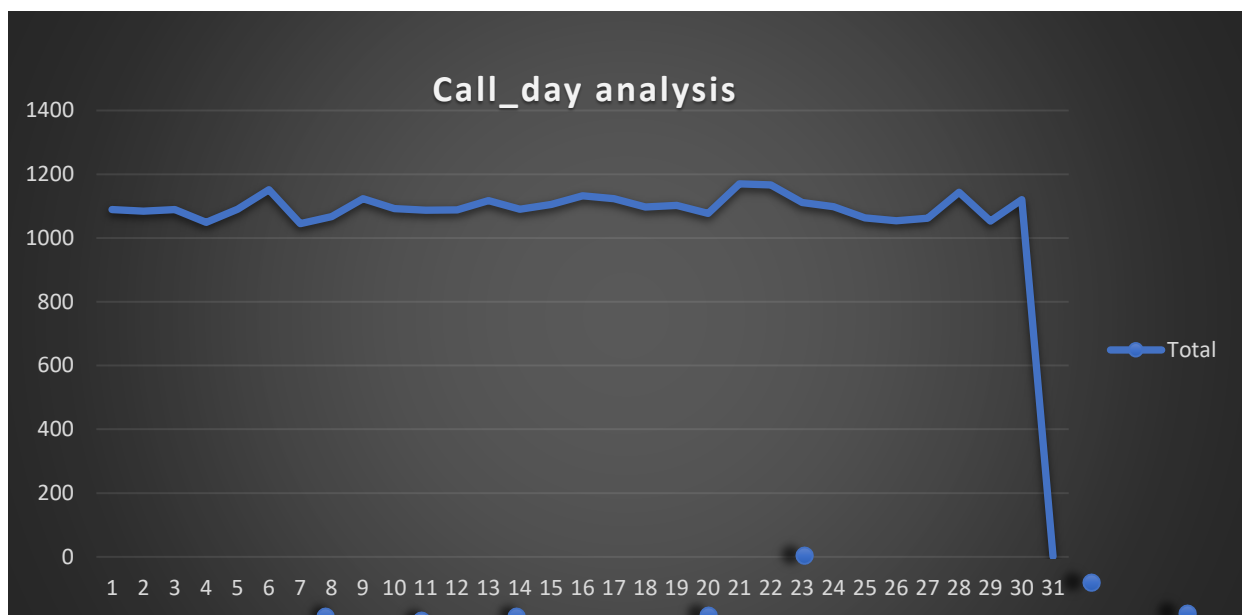


Fig 5.1(Call day Analysis)

Row Labels	Count of id
1	1089
2	1084
3	1089
4	1049
5	1090
6	1152
7	1045
8	1067
9	1123
10	1092
11	1087
12	1088
13	1117
14	1090
15	1105
16	1132

17	1123
18	1097
19	1102
20	1077
21	1170
22	1167
23	1111
24	1098
25	1063
26	1054
27	1062
28	1144
29	1053
30	1120
31	1
Grand Total	32941

The above analysis is done using cross tabulation (pivot table) by selecting the columns Id and Call day. It is found that on day 21, 1170 calls were received and it is the highest number of calls received.

5.2 Analysed based on the number of id's called to each channel:

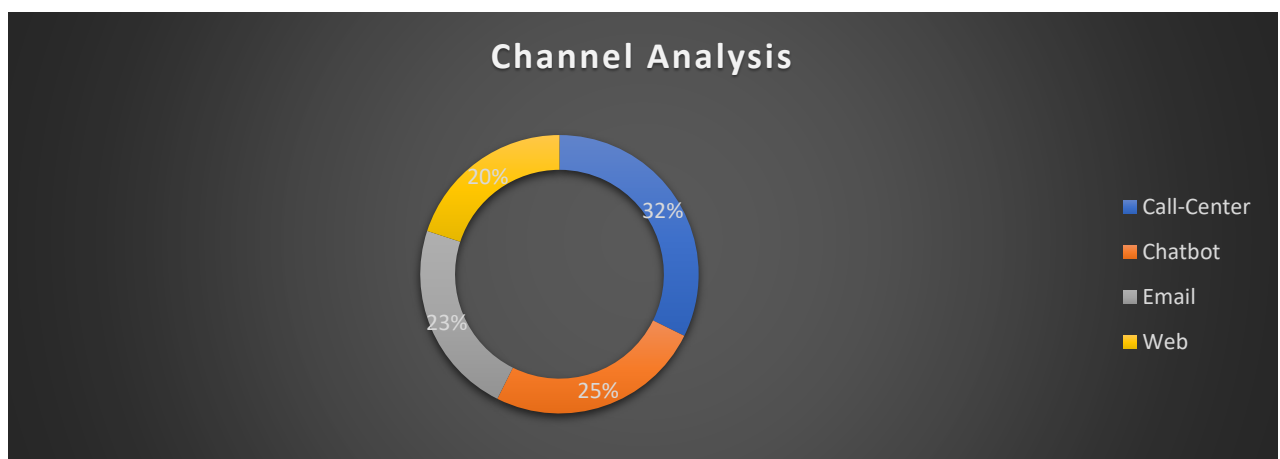


Fig 5.2(Channel Analysis)

Row Labels	Count of id
Call-Centre	10639
Chatbot	8256
Email	7470
Web	6576
Grand Total	32941

The above analysis is done using cross tabulation (pivot table) using the columns Id and Channel. It is found that Call Centre holds the highest number of call records.

5.3 Analysed and segregated based on id's called from each state:

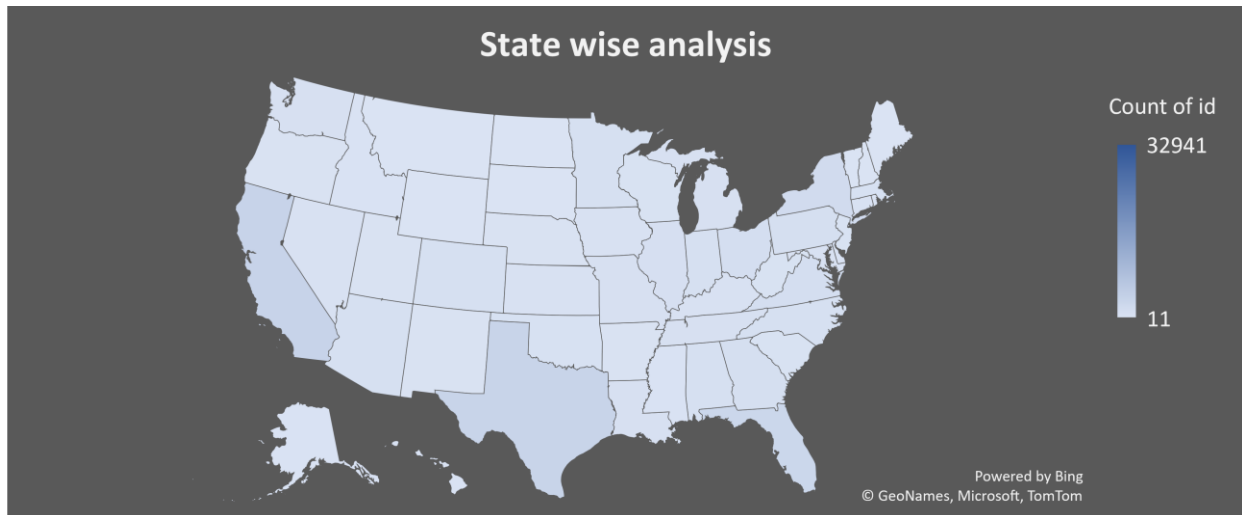


Fig 5.3(State Analysis)

Row Labels	Count of id
Alabama	738
Alaska	146
Arizona	737
Arkansas	204
California	3631
Colorado	742
Connecticut	408
Delaware	128
District of Columbia	1110
Florida	2834
Georgia	926
Hawaii	149
Idaho	174
Illinois	848
Indiana	736
Iowa	366
Kansas	467
Kentucky	411
Louisiana	627
Maine	16
Maryland	415

Massachusetts	493
Michigan	612
Minnesota	712
Mississippi	178
Missouri	682
Montana	94
Nebraska	243
Nevada	459
New Hampshire	51
New Jersey	317
New Mexico	212
New York	1786
North Carolina	765
North Dakota	76
Ohio	1160
Oklahoma	538
Oregon	261
Pennsylvania	1017
Rhode Island	35
South Carolina	315
South Dakota	93
Tennessee	664
Texas	3572
Utah	298
Vermont	14
Virginia	1164
Washington	663
West Virginia	301
Wisconsin	342
Wyoming	11
Grand Total	32941

The above analysis is done using cross tabulation tool with the column Id, State. It is found that California holds the highest number of enquiries.

5.4 Analysed based on the reason of calling:

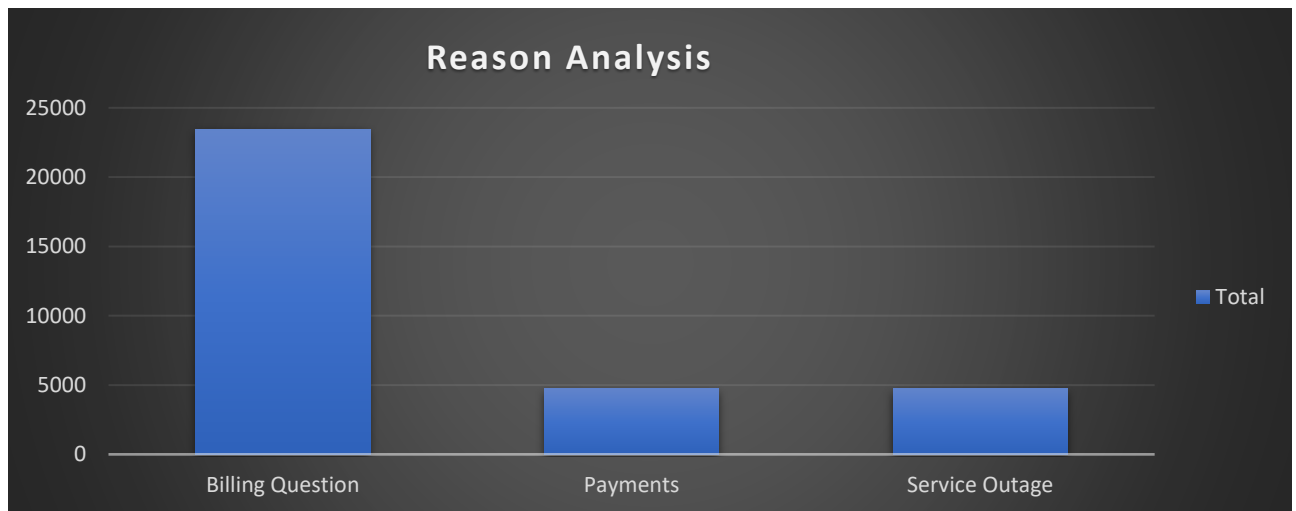


Fig 5.4(Reason Analysis)

Row Labels	Count of id
Billing Question	23462
Payments	4749
Service Outage	4730
Grand Total	32941

The analysis is done using cross tabulation. The column Customer Id and Reason are taken for analysis. It is found that people call mostly for the reason of billing question.

5.5 Analysed and segregated the id's based on the response time:

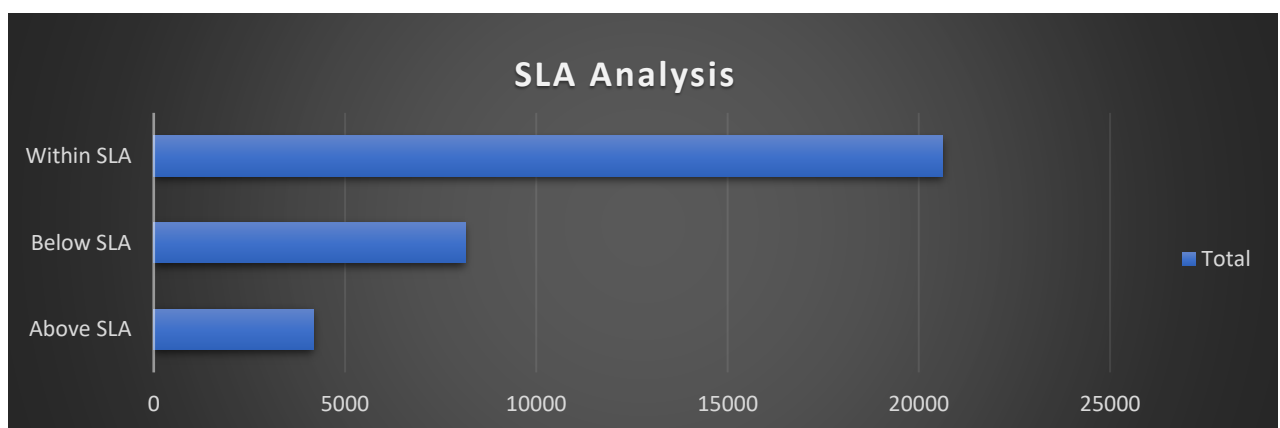


Fig 5.5(SLA Analysis)

Row Labels	Count of id
Above SLA	4168
Below SLA	8148
Within SLA	20625
Grand Total	32941

The analysis is done using cross tabulation. The columns Id and response time are selected for the analysis. The above analysis shows that most of the people call are in within SLA category (SLA – Service Level Agreement).

5.6 Analysis based on call centres available in cities:

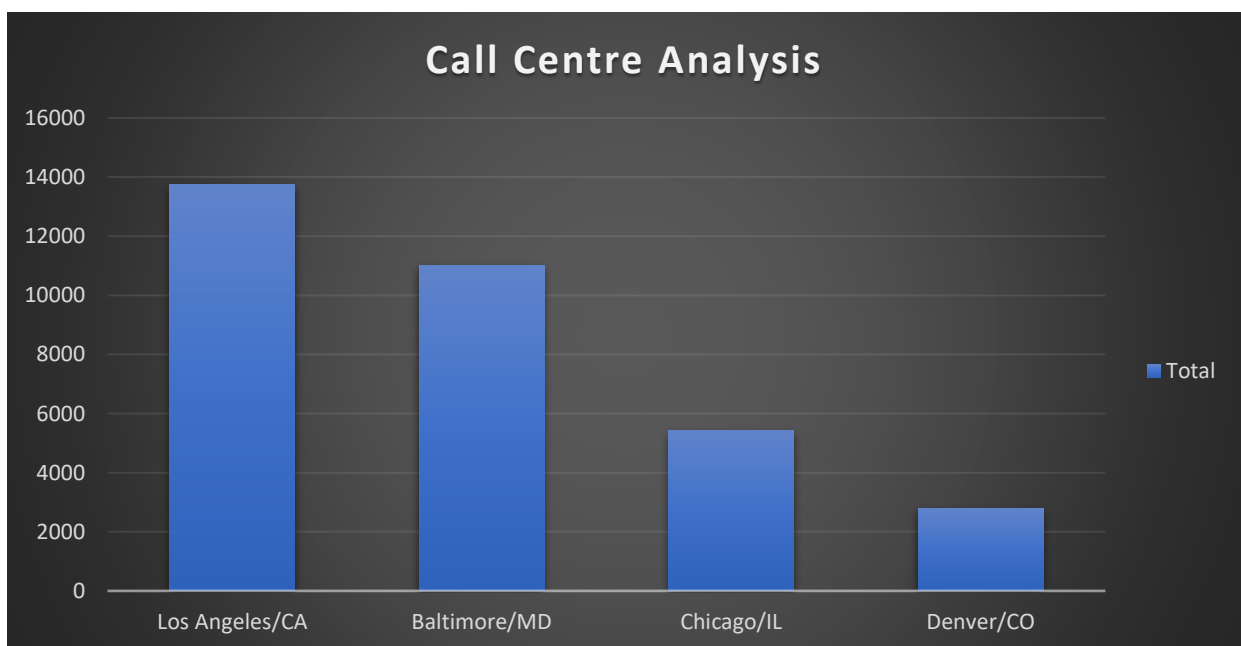


Fig 5.6(Call Centre Analysis)

Row Labels	Count of call_centre
Los Angeles/CA	13734
Baltimore/MD	11012
Chicago/IL	5419
Denver/CO	2776
Grand Total	32941

The analysis is done using cross tabulation. The column selected is Call Centre. The output found is that the call centres present in Los Angeles received most inquiries.

5.7 Analysed and segregated data based on sentiment and response time:

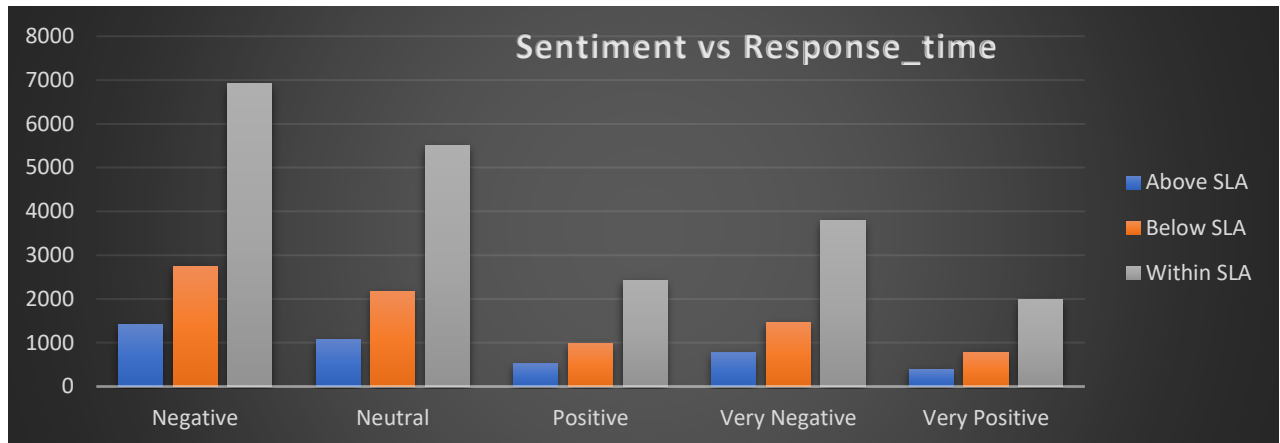


Fig 5.7(Sentiment, Response time Analysis)

Count response_time	of	Column Labels		
Row Labels	Above SLA	Below SLA	Within SLA	Grand Total
Negative	1406	2745	6912	11063
Neutral	1076	2169	5509	8754
Positive	520	979	2429	3928
Very Negative	766	1472	3788	6026
Very Positive	400	783	1987	3170
Grand Total	4168	8148	20625	32941

The analysis is done using the cross tabulation. The columns selected are Sentiment and response time. From that it is found that, Negative sentiment is higher in all above, below and within SLA.

5.8 Analysed based on sentiment and channel:

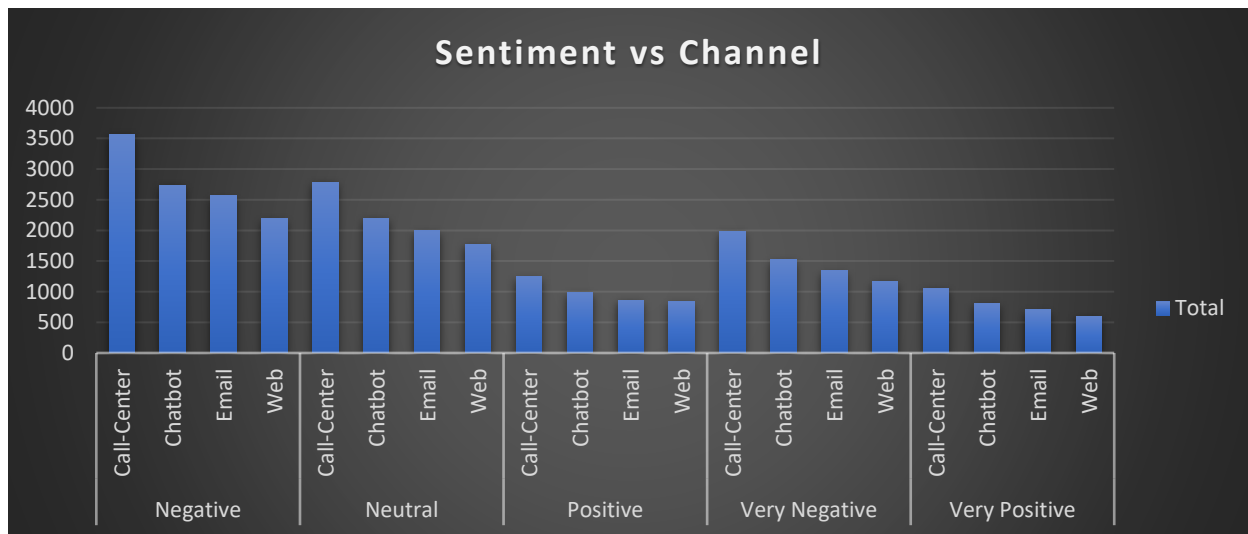


Fig 5.8(Sentiment, Channel Analysis)

Row Labels	Count of channel
Negative	11063
Call-Center	3570
Chatbot	2737
Email	2565
Web	2191
Neutral	8754
Call-Center	2785
Chatbot	2201
Email	1995
Web	1773
Positive	3928
Call-Center	1245
Chatbot	983
Email	863
Web	837
Very Negative	6026
Call-Center	1983
Chatbot	1526
Email	1344
Web	1173
Very Positive	3170
Call-Center	1056
Chatbot	809
Email	703
Web	602

The above analysis is done with cross tabulation tool. The columns for analysis are Sentiment and Channel. The output is that in all the sentiments, call centre channel has the highest calls. Negative sentiment has the highest count.

5.9 DASHBOARD:

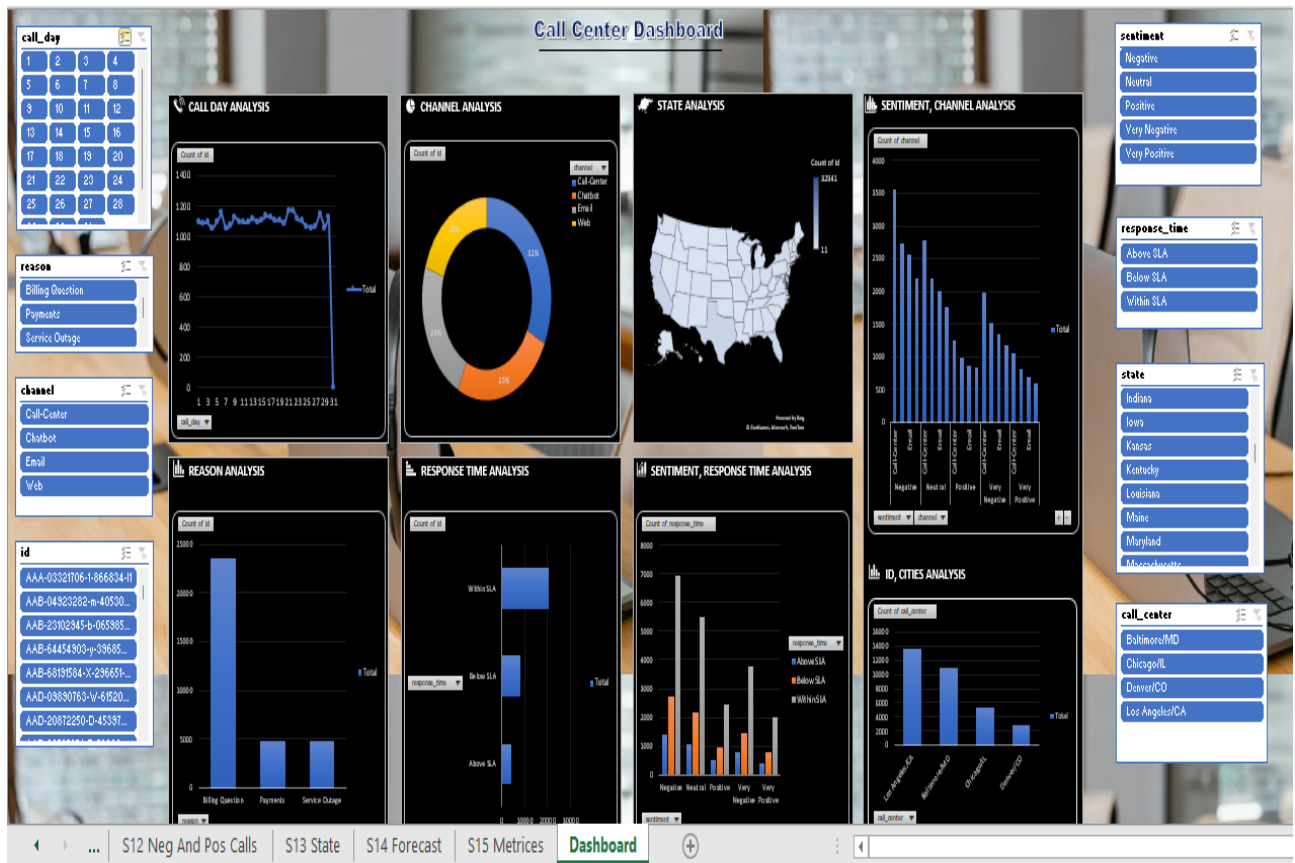


Fig 5.9(Dashboard)

The above dashboard contains eight charts in it. The first chart is a line chart which tells about call day analysis, the second chart is a doughnut chart which tells about analysis on channel that people prefer the most, the third chart is a map chart that tells about analysis on states, the fourth chart is a column chart which shows about the reason analysis, the fifth chart is a bar chart it tells about the category that people fall in (SLA category), the sixth chart is about sentiment and response time analysis, the seventh chart is about Sentiment, channel analysis, the eighth chart is about the call centre analysis. There are slicers created for its easy access on a single page. Dashboard helps to make decisions easier and faster.

The overall analysis found are:

- For the entire month of October 2020, there were a total of 32941 inquiries.
- The typical call durations last for an average of 25 minutes (25.02).
- The average of customer satisfaction rating is around 6 (5.55).
- From the analysis it is found that on 21/10/2020, 1170 calls were received and it is the day that received highest number of calls.
- Call centre channel holds the highest number of call records.
- California state holds the highest number of inquiries followed by Texas and Florida.
- Most of the interactions between the caller and customer fall within SLA.
- 75% of the entire records billing questions holds as the reason.
- With respect to sentiment, negative sentiment holds the highest record.
- The call centres present in Los Angeles received most inquiries.

CHAPTER 6

CONCLUSION

This chapter contains the conclusion and summary of the call centre data set. It contains details of everything that had been done in the data set.

In the call centre data set first the category of all columns were checked and changed accordingly. Indentation, font and column width were changed accordingly. A column name call day was newly created. The analysis was done in pivot table and different pivot charts were created for better understanding and the results were found accordingly. Then a forecast sheet was created for call duration in minutes for first 8 days of September month. Finally, a dashboard is created for better understanding. Dashboards are used to access data at a glance, it helps in better decision making. It is used to track, analyse and display data.

The above data set has data of the month October 2020. From the analysis it is found that there was a total of 32941 calls and day 21 has received 1170 calls which is the highest number of calls received on the entire month. The average of call duration lasts about 25 minutes and the average of customer satisfaction score is about 6. Call centre channel holds the highest number of call records. California state holds the highest number of analysis and mostly the customers fall with SLA category. Billing question was the main reason for the interactions and mostly the interactions end up with negative sentiment. The call centres present in Los Angeles received most inquiries. Customers mostly call to call centres with any issues only. So, if the people working in call centres try to interact with a good attitude then any of the conversations won't end up in a negative way and it increases the customers satisfaction too.

CHAPTER 7

REFERENCES

This chapter has details about the references that had been used along with the links.

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10. <https://webpivottable.com/doc/pivot-table/>

CHAPTER 8

APPENDIX

This chapter tells about the queries or methods used in this internship project.

This project is done in MS Excel. Analysing part had been done with pivot table and pivot chart for descriptive and forecast sheet for statistical method.

The following analysis are found:

- Id vs Call day analysis
- Id vs Channel analysis
- Id vs State analysis
- Id vs Reason analysis
- Id vs Response time analysis
- Call centre as per cities analysis
- Sentiment vs Response time analysis
- Sentiment vs Channel analysis
- Forecast sheet analysis