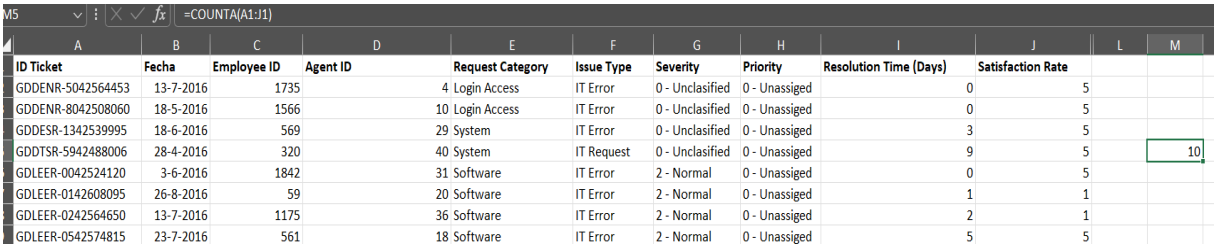
IT Tickets Analysis

By Maddu Sruthi Geervani

Objective Questions

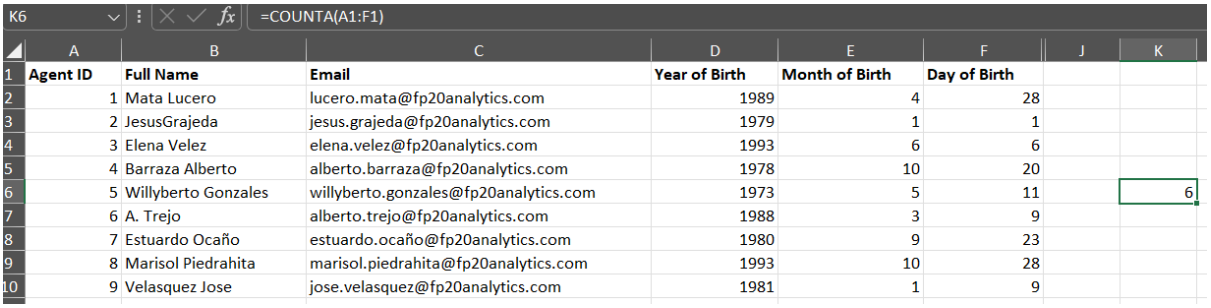
1.What is the total no. of attributes present in the data?

Visualization:



M5 =COUNTA(A1:J1)

ID Ticket	Fecha	Employee ID	Agent ID	Request Category	Issue Type	Severity	Priority	Resolution Time (Days)	Satisfaction Rate		
GDDENR-5042564453	13-7-2016	1735	4	Login Access	IT Error	0 - Unclasified	0 - Unassiged	0	5		
GDDENR-8042508060	18-5-2016	1566	10	Login Access	IT Error	0 - Unclasified	0 - Unassiged	0	5		
GDDESR-1342539995	18-6-2016	569	29	System	IT Error	0 - Unclasified	0 - Unassiged	3	5		
GDDTSR-5942488006	28-4-2016	320	40	System	IT Request	0 - Unclasified	0 - Unassiged	9	5		10
GDLEER-0042524120	3-6-2016	1842	31	Software	IT Error	2 - Normal	0 - Unassiged	0	5		
GDLEER-0142608095	26-8-2016	59	20	Software	IT Error	2 - Normal	0 - Unassiged	1	1		
GDLEER-0242564650	13-7-2016	1175	36	Software	IT Error	2 - Normal	0 - Unassiged	2	1		
GDLEER-0542574815	23-7-2016	561	18	Software	IT Error	2 - Normal	0 - Unassiged	5	5		



K6 =COUNTA(A1:F1)

Agent ID	Full Name	Email	Year of Birth	Month of Birth	Day of Birth		
1	Mata Lucero	lucero.mata@fp20analytics.com	1989	4	28		
2	JesusGrajeda	jesus.grajeda@fp20analytics.com	1979	1	1		
3	Elena Velez	elena.velez@fp20analytics.com	1993	6	6		
4	Barraza Alberto	alberto.barraza@fp20analytics.com	1978	10	20		
5	Willyberto Gonzales	willyberto.gonzales@fp20analytics.com	1973	5	11		6
6	A. Trejo	alberto.trejo@fp20analytics.com	1988	3	9		
7	Estuardo Ocaño	estuardo.ocaño@fp20analytics.com	1980	9	23		
8	Marisol Piedrahita	marisol.piedrahita@fp20analytics.com	1993	10	28		
9	Velasquez Jose	jose.velasquez@fp20analytics.com	1981	1	9		

Observation:

- The workbook contains 2 sheets, and each sheet has a distinct set of attributes.
- Sheet 1 contains 10 attributes, and Sheet 2 contains 6 attributes, making a total of 16 attributes in the dataset.
- Performed the countA function to find the no. of attributes by selecting the header row.
- Understanding the total number of attributes helps in determining the breadth of data available for analysis.

2.Which columns have inconsistent or missing values, and what is the count of such values?

Observation:

- I used the COUNTBLANK() function on each column to check for any missing (blank) values.
- All columns returned a count of zero, confirming there were no missing or inconsistent values.
- The excel formula I implemented is =COUNTBLANK(A1:O97499)

Visualization:

missing values in the dataset	0

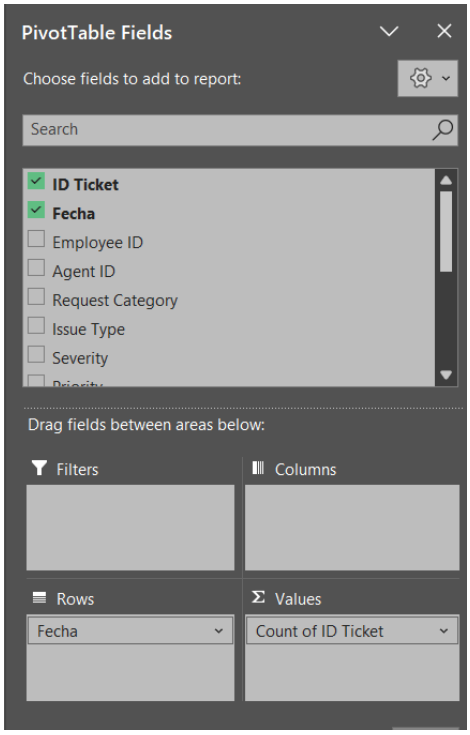
3.What is the average daily ticket volume over time?

Guidelines:

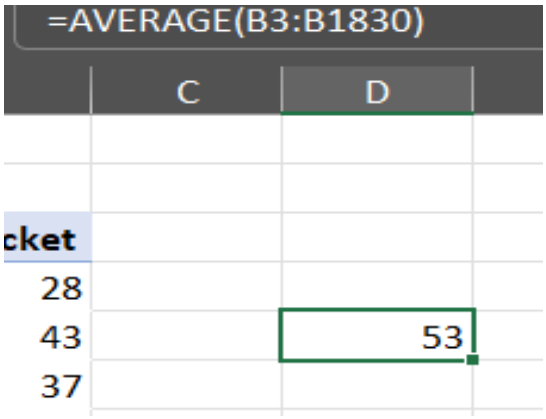
- Created a Pivot Table with the Date in rows and the count of tickets in values to see how many tickets came in each day.
- Looked at the daily ticket counts from the Pivot Table to understand the overall volume.
- Used the =average() function on the ticket count column to find the average daily ticket volume.

Visualization:

Step1: Inserted a PivotTable



Step2: Finding the Average from the output of PivotTable



Observation:

- The Pivot Table helped easily break down the number of tickets per day.
- Calculating the average from those values was simple and accurate.

- On average, about 53 tickets were received per day, showing a consistent daily workload.

4. What is the distribution of ticket categories (e.g., Login Access, System, Software)?

Guidelines:

- Created a Pivot Table with the Ticket Category column in the Rows field and the count of tickets in the Values field to see how many tickets belong to each category.
- This helped quickly summarize the distribution across categories like Hardware, Login Access, System, Software.

Visualization:

Inserted a PivotTable

Row Labels	Count of Request Category
Hardware	9733
Login Access	29193
Software	19570
System	39002
Grand Total	**97498**

Observation:

- The Pivot Table clearly showed how tickets are spread across different categories, making it easy to spot which ones are most frequent.

- Categories like Login Access(29193) and System(39002) had higher counts, showing they're common issues users face.

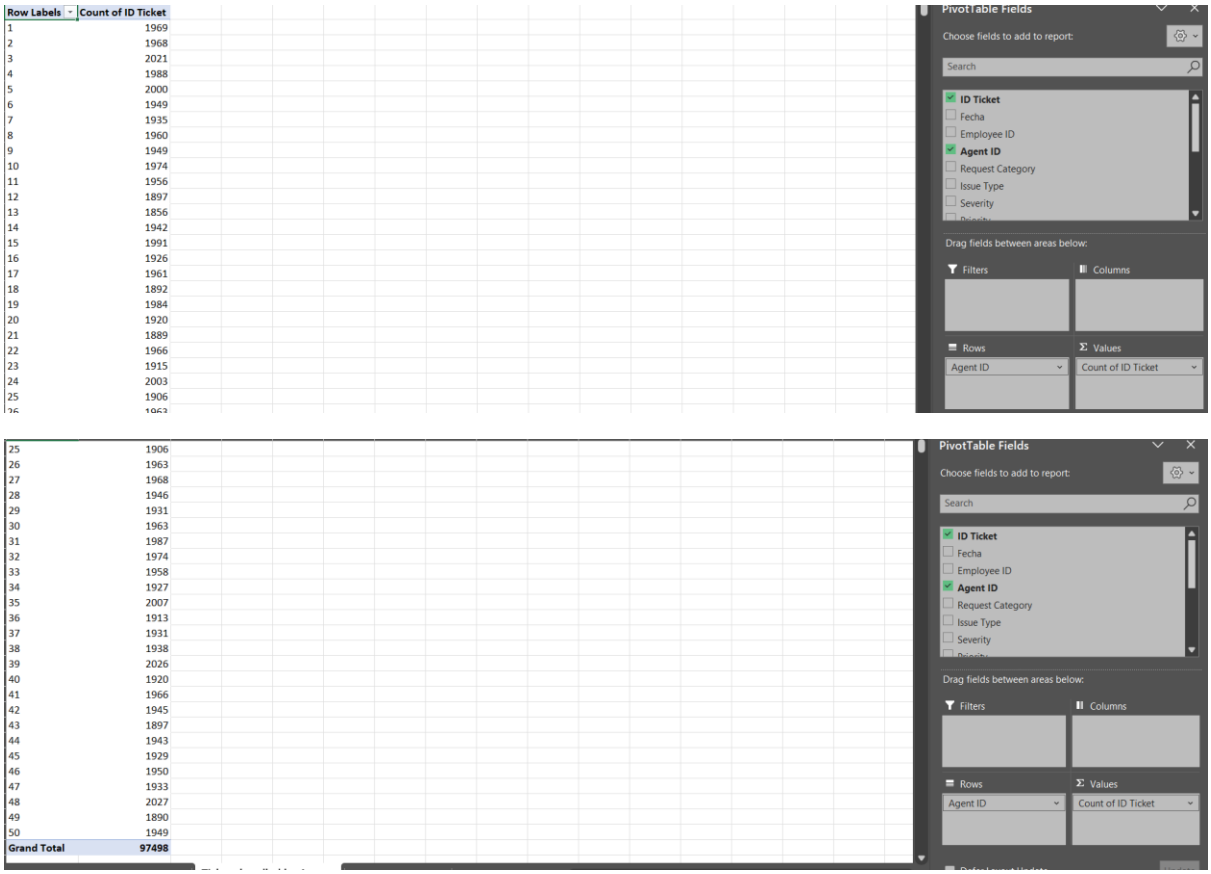
5.How many tickets has each agent handled?

Guidelines:

- Used a Pivot Table with the Agent ID in the Rows field and ticket count in the Values field to see how many tickets each agent managed.
- This gave a neat summary of each agent's total ticket workload.

Visualization:

Inserted a PivotTable



Row Labels	Count of ID Ticket
1	1969
2	1968
3	2021
4	1988
5	2000
6	1949
7	1935
8	1960
9	1949
10	1974
11	1956
12	1897
13	1856
14	1942
15	1991
16	1926
17	1961
18	1892
19	1984
20	1920
21	1889
22	1966
23	1915
24	2003
25	1906
26	1963
27	1968
28	1946
29	1931
30	1963
31	1987
32	1974
33	1958
34	1927
35	2007
36	1913
37	1931
38	1938
39	2026
40	1920
41	1966
42	1945
43	1897
44	1943
45	1929
46	1950
47	1933
48	2027
49	1890
50	1949
Grand Total	97498

Observation:

- The Pivot Table showed the ticket count handled by each agent, making it easy to compare workloads.
- Some agents had significantly more tickets than others, which could be due to their assigned departments, etc.

6.How can you extract the domain from the email addresses in the IT Agents sheet?

Guidelines:

- Used this formula =RIGHT(C2:C51,LEN(C2:C51)-FIND("@",C2:C51)) for extracting the domain name from the email address.

Visualization:

J2 =RIGHT(C2:C51,LEN(C2:C51)-FIND("@",C2:C51))

Agent ID	Full Name	Email	Year of Birth	Month of Birth	Day of Birth	Age	Domain
1	Mata Lucero	lucero.mata@fp20analytics.com	1989	4	28	36	fp20analytics.com
2	JesusGrajeda	jesus.grajeda@fp20analytics.com	1979	1	1	46	fp20analytics.com
3	Elena Velez	elena.velez@fp20analytics.com	1993	6	6	31	fp20analytics.com
4	Barraza Alberto	alberto.barraza@fp20analytics.com	1978	10	20	46	fp20analytics.com
5	Willyberto Gonzales	willyberto.gonzales@fp20analytics.com	1973	5	11	52	fp20analytics.com
6	A. Trejo	alberto.trejo@fp20analytics.com	1988	3	9	37	fp20analytics.com
7	Estuardo Ocaño	estuardo.ocaño@fp20analytics.com	1980	9	23	44	fp20analytics.com
8	Marisol Piedrahita	marisol.piedrahita@fp20analytics.com	1993	10	28	31	fp20analytics.com
9	Velasquez Jose	jose.velasquez@fp20analytics.com	1981	1	9	44	fp20analytics.com
10	Alberto Casillas	alberto.casillas@fp20analytics.com	1993	2	1	32	fp20analytics.com
11	Lopez Moran.	lopez.moran@fp20analytics.com	1980	4	21	45	fp20analytics.com
12	Javier D.	javier.davila@fp20analytics.com	1976	5	22	49	fp20analytics.com
13	Griselda Galindo	griselda.galindo@fp20analytics.com	1996	2	3	29	fp20analytics.com
14	EstuardoTorres	estuardo.torres@fp20analytics.com	1995	12	21	29	fp20analytics.com
15	Galindo Guadalupe	guadalupe.galindo@fp20analytics.com	1995	6	16	29	fp20analytics.com
16	Orci Carlos	carlos.orci@fp20analytics.com	1982	10	26	42	fp20analytics.com
17	Leon Lourdes	lourdes.leon@fp20analytics.com	1971	12	28	53	fp20analytics.com
18	Miller Gaviria	miller.gaviria@fp20analytics.com	1980	10	9	44	fp20analytics.com
19	Alfonso Barraza	alfonso.barraza@fp20analytics.com	1990	5	13	35	fp20analytics.com
20	Eduardo Luna	eduardo.luna@fp20analytics.com	1983	11	22	41	fp20analytics.com
21	Alberto Gastelum	alberto.gastelum@fp20analytics.com	1996	10	10	28	fp20analytics.com
22	Lorena	lorena.leon@fp20analytics.com	1996	7	16	28	fp20analytics.com
23	Guadalupe Hernandez	guadalupe.hernandez@fp20analytics.com	1986	6	12	38	fp20analytics.com
24	Barbara Grijalva	barbara.grijalva@fp20analytics.com	1972	6	5	52	fp20analytics.com
25	Sandra Lujan	sandra.lujan@fp20analytics.com	1988	11	17	36	fp20analytics.com
26	Flores Sierra	flores.sierra@fp20analytics.com	1982	3	15	43	fp20analytics.com

Observation:

- While using the formula, mentioning the range helps in automating the formula to the further cells.
- RIGHT function helps in extracting the text from the right side of the cell. Len(), find() functions are used to find the length of the text in the cell and find("@") in the cell respectively.

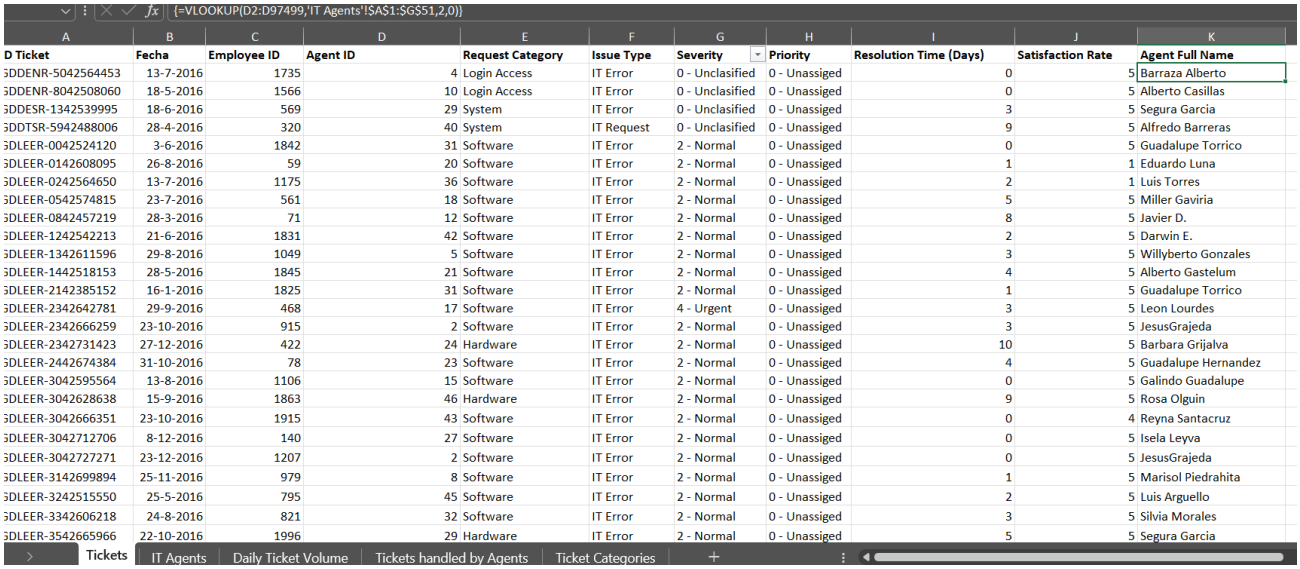
7. How can you find the full name of an agent given their Agent ID?

Guidelines:

- Used the VLOOKUP function to search for the Agent ID in the IT Agents sheet.
- Retrieved the corresponding Full Name from the same row using the correct column index.
- Using this formula using vlookup function and arrayformula "{=VLOOKUP(D2:D97499,'IT Agents'!$A$1:$G$51,2,0)}" helps in fetching and automating the data

Visualization:

Used VLOOKUP() on the K column in the Tickets sheet



{=VLOOKUP(D2:D97499,'IT Agents'!$A$1:$G$51,2,0)}

A	B	C	D	E	F	G	H	I	J	K
D Ticket	Fecha	Employee ID	Agent ID	Request Category	Issue Type	Severity	Priority	Resolution Time (Days)	Satisfaction Rate	Agent Full Name
3DDENR-5042564453	13-7-2016	1735	4	Login Access	IT Error	0 - Unclasified	0 - Unassiged	0	5	Barraza Alberto
3DDENR-8042508060	18-5-2016	1566	10	Login Access	IT Error	0 - Unclasified	0 - Unassiged	0	5	Alberto Casillas
3DDESR-1342539995	18-6-2016	569	29	System	IT Error	0 - Unclasified	0 - Unassiged	3	5	Segura Garcia
3DDTSR-5942488006	28-4-2016	320	40	System	IT Request	0 - Unclasified	0 - Unassiged	9	5	Alfredo Barreras
3DLEER-0042524120	3-6-2016	1842	31	Software	IT Error	2 - Normal	0 - Unassiged	0	5	Guadalupe Torrico
3DLEER-0142608095	26-8-2016	59	20	Software	IT Error	2 - Normal	0 - Unassiged	1	1	Eduardo Luna
3DLEER-0242564650	13-7-2016	1175	36	Software	IT Error	2 - Normal	0 - Unassiged	2	1	Luis Torres
3DLEER-0542574815	23-7-2016	561	18	Software	IT Error	2 - Normal	0 - Unassiged	5	5	Miller Gaviria
3DLEER-0842457219	28-3-2016	71	12	Software	IT Error	2 - Normal	0 - Unassiged	8	5	Javier D.
3DLEER-1242542213	21-6-2016	1831	42	Software	IT Error	2 - Normal	0 - Unassiged	2	5	Darwin E.
3DLEER-1342611596	29-8-2016	1049	5	Software	IT Error	2 - Normal	0 - Unassiged	3	5	Willyberto Gonzales
3DLEER-1442518153	28-5-2016	1845	21	Software	IT Error	2 - Normal	0 - Unassiged	4	5	Alberto Gastelum
3DLEER-2142385152	16-1-2016	1825	31	Software	IT Error	2 - Normal	0 - Unassiged	1	5	Guadalupe Torrico
3DLEER-2342642781	29-9-2016	468	17	Software	IT Error	4 - Urgent	0 - Unassiged	3	5	Leon Lourdes
3DLEER-2342666259	23-10-2016	915	2	Software	IT Error	2 - Normal	0 - Unassiged	3	5	JesusGrajeda
3DLEER-2342731423	27-12-2016	422	24	Hardware	IT Error	2 - Normal	0 - Unassiged	10	5	Barbara Grijalva
3DLEER-2442674384	31-10-2016	78	23	Software	IT Error	2 - Normal	0 - Unassiged	4	5	Guadalupe Hernandez
3DLEER-3042595564	13-8-2016	1106	15	Software	IT Error	2 - Normal	0 - Unassiged	0	5	Galindo Guadalupe
3DLEER-3042628638	15-9-2016	1863	46	Hardware	IT Error	2 - Normal	0 - Unassiged	9	5	Rosa Olguin
3DLEER-3042666351	23-10-2016	1915	43	Software	IT Error	2 - Normal	0 - Unassiged	0	4	Reyna Santacruz
3DLEER-3042712706	8-12-2016	140	27	Software	IT Error	2 - Normal	0 - Unassiged	0	5	Isela Leyva
3DLEER-3042727271	23-12-2016	1207	2	Software	IT Error	2 - Normal	0 - Unassiged	0	5	JesusGrajeda
3DLEER-3142699894	25-11-2016	979	8	Software	IT Error	2 - Normal	0 - Unassiged	1	5	Marisol Piedrahita
3DLEER-3242515550	25-5-2016	795	45	Software	IT Error	2 - Normal	0 - Unassiged	2	5	Luis Arguello
3DLEER-3342606218	24-8-2016	821	32	Software	IT Error	2 - Normal	0 - Unassiged	3	5	Silvia Morales
3DLEER-3542665966	22-10-2016	1996	29	Hardware	IT Error	2 - Normal	0 - Unassiged	5	5	Segura Garcia

Tickets | IT Agents | Daily Ticket Volume | Tickets handled by Agents | Ticket Categories

Observation:

- VLOOKUP made it quick and easy to match Agent IDs with their full names.
- This method helps avoid manual searching, especially when working with large datasets.

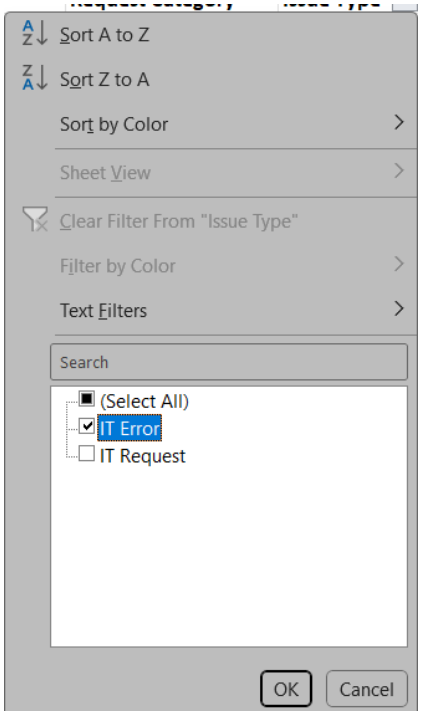
8. What is the count of each issue type (e.g., IT Error, IT Request)?

Guidelines:

- Applied a filter on the Issue Type column to view each category separately.
- Selected the filtered cells, and Excel showed the count at the status bar.

Visualization:

Step1: Applied Filter



Step2: Filtered the required values

F	G	H	I	J
Issue Type	Severity	Priority	Resolution Time (Days)	Satisfaction Rate
IT Error	0 - Unclasified	0 - Unassiged	0	
IT Error	0 - Unclasified	0 - Unassiged	0	
IT Error	0 - Unclasified	0 - Unassiged	3	
IT Error	2 - Normal	0 - Unassiged	0	
IT Error	2 - Normal	0 - Unassiged	1	
IT Error	2 - Normal	0 - Unassiged	2	
IT Error	2 - Normal	0 - Unassiged	5	
IT Error	2 - Normal	0 - Unassiged	8	
IT Error	2 - Normal	0 - Unassiged	2	
IT Error	2 - Normal	0 - Unassiged	3	
IT Error	2 - Normal	0 - Unassiged	4	
IT Error	2 - Normal	0 - Unassiged	1	
IT Error	4 - Urgent	0 - Unassiged	3	
IT Error	2 - Normal	0 - Unassiged	3	
IT Error	2 - Normal	0 - Unassiged	10	
IT Error	2 - Normal	0 - Unassiged	4	
IT Error	2 - Normal	0 - Unassiged	0	
IT Error	2 - Normal	0 - Unassiged	9	
IT Error	2 - Normal	0 - Unassiged	0	
IT Error	2 - Normal	0 - Unassiged	0	
IT Error	2 - Normal	0 - Unassiged	0	
IT Error	2 - Normal	0 - Unassiged	1	
IT Error	2 - Normal	0 - Unassiged	2	
IT Error	2 - Normal	0 - Unassiged	3	
IT Error	2 - Normal	0 - Unassiged	5	
IT Error	2 - Normal	0 - Unassiged	6	

Categories

Count: 24279

F	G	H	I	J
Issue Type	Severity	Priority	Resolution Time (Days)	Satisfaction Rate
IT Request	0 - Unclasified	0 - Unassiged	9	5
IT Request	2 - Normal	0 - Unassiged	10	1
IT Request	2 - Normal	0 - Unassiged	11	5
IT Request	2 - Normal	0 - Unassiged	11	5
IT Request	2 - Normal	0 - Unassiged	11	5
IT Request	2 - Normal	0 - Unassiged	2	5
IT Request	2 - Normal	0 - Unassiged	3	5
IT Request	2 - Normal	0 - Unassiged	5	5
IT Request	2 - Normal	0 - Unassiged	5	5
IT Request	2 - Normal	0 - Unassiged	5	5
IT Request	2 - Normal	0 - Unassiged	5	5
IT Request	2 - Normal	0 - Unassiged	7	1
IT Request	2 - Normal	0 - Unassiged	9	5
IT Request	2 - Normal	0 - Unassiged	10	4
IT Request	2 - Normal	0 - Unassiged	10	5
IT Request	2 - Normal	0 - Unassiged	10	5
IT Request	2 - Normal	0 - Unassiged	10	5
IT Request	2 - Normal	0 - Unassiged	11	5
IT Request	2 - Normal	0 - Unassiged	11	5
IT Request	2 - Normal	0 - Unassiged	11	5
IT Request	2 - Normal	0 - Unassiged	11	5
IT Request	2 - Normal	0 - Unassiged	2	5
IT Request	2 - Normal	0 - Unassiged	12	5
IT Request	2 - Normal	0 - Unassiged	2	5

Categories

Count: 73221

Observation:

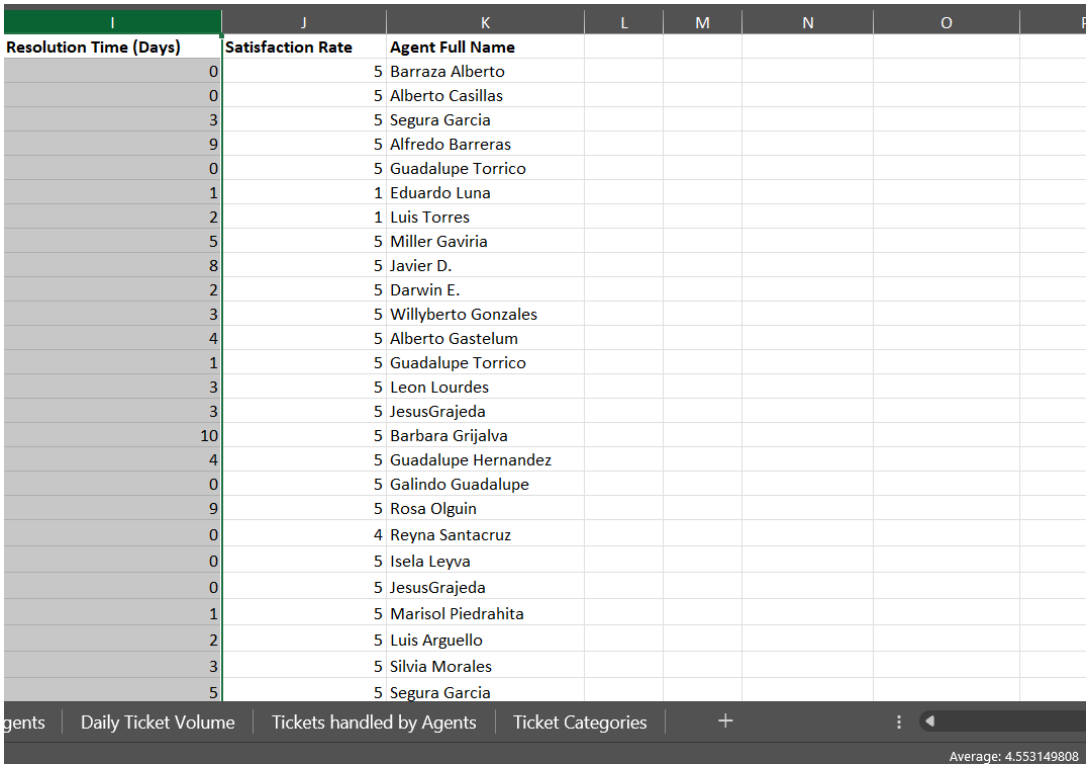
- Filtering helped in easily checking how many tickets belong to each issue type.
- The count displayed at the status bar made it quick to note down the total without using any formula**.**

9. What is the daily average resolution time for tickets?

Guidelines:

- Selected the entire "Resolution Time (Days)" column to include all values.
- Looked at the status bar at the bottom of Excel, which automatically displays the average of selected numeric values.

Visualization:



I	J	K	L	M	N	O	P
Resolution Time (Days)	Satisfaction Rate	Agent Full Name					
0	5	Barraza Alberto					
0	5	Alberto Casillas					
3	5	Segura Garcia					
9	5	Alfredo Barreras					
0	5	Guadalupe Torrico					
1	1	Eduardo Luna					
2	1	Luis Torres					
5	5	Miller Gaviria					
8	5	Javier D.					
2	5	Darwin E.					
3	5	Willyberto Gonzales					
4	5	Alberto Gastelum					
1	5	Guadalupe Torrico					
3	5	Leon Lourdes					
3	5	JesusGrajeda					
10	5	Barbara Grijalva					
4	5	Guadalupe Hernandez					
0	5	Galindo Guadalupe					
9	5	Rosa Olguin					
0	4	Reyna Santacruz					
0	5	Isela Leyva					
0	5	JesusGrajeda					
1	5	Marisol Piedrahita					
2	5	Luis Arguello					
3	5	Silvia Morales					
5	5	Segura Garcia					

Observation:

- The average resolution time was calculated instantly without using a formula.
- Since these are days we can't consider it as 4.5 days, so we are rounding up to the next number and the answer will be "5 days"
- This method is quick and useful when we just want a rough or instant overview of numeric data like resolution days.
- It saves time in large datasets by avoiding extra steps like creating helper cells or formulas.

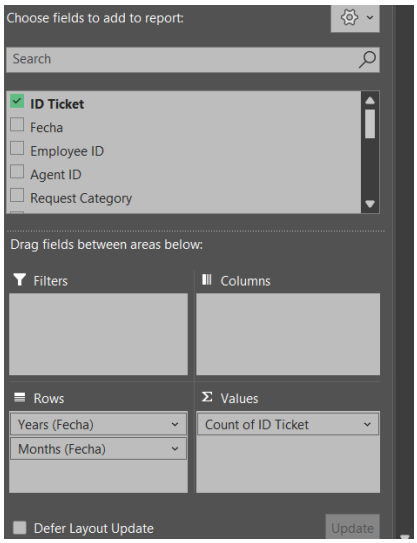
10.How has the volume of tickets changed over time?

Guidelines:

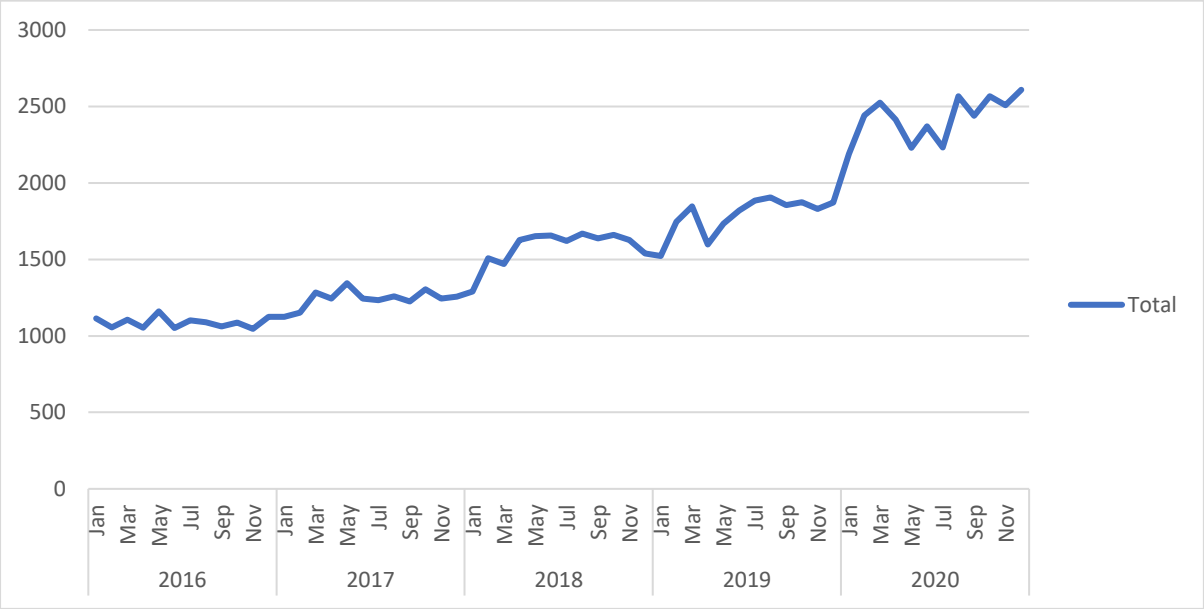
- Created a Pivot Table with the Fecha in the Rows area and the Ticket ID in the Values area, set it to the "count"
- Grouped the dates by Month and Year to make the data easier to interpret.
- Inserted a Line Chart from the Pivot Table to visually track how ticket volume varied over time**.**

Visualization:

Step1: Inserted a PivotTable



Step2: Inserted a chart



Observation:

- The line chart clearly showed how ticket volume fluctuated across different months.
- Certain months (i.e., Nov 2020) had visible spikes, suggesting higher support demand during that period.
- The trend helps identify peak workloads and can guide better planning for agent availability**.**

11.What is the average age of the IT agents?

Guidelines:

- The dataset had Date of Birth split into Year, Month, and Day columns. First, I concatenated them into a full date using the “CONCATENATE” function.
- Then, I used the DATEDIF formula to calculate the age of each agent by comparing their birthdate with the current date.
- Finally, I selected the Age column and used AVERAGE function to find the overall average age of the agents.
- This results in average age of agents is “40”

Visualization:

```
=CONCATENATE(F2,"/",E2,"/",D2)
C
```

```
=DATEDIF(H2,TODAY(),"y")
C
```

```
=AVERAGE(I2:I51)
C
```

Observation:

- Creating a valid full birthdate helped in accurately calculating each agent's age.
- The DATEDIF function gave the current age for each agent based on today's date.

12.Is there a correlation between the severity of issues and the resolution time?

Visualization:

```
=CORREL(I2:I97499,L2:L97499)
```

Correlation between the severity of issues and the resolution time
-0.0405

Observation:

- The correlation coefficient between issue severity and resolution time is **-0.0405**.
- This indicates a very weak negative relationship between the two variables.

13.How many categorical columns are there in the data?

Guidelines:

- Look through the dataset to find out how many columns contain categorical data—these are the ones made up of names, categories, or groups.

Visualization:

D	E	F	G	H
Agent ID	**Request Category**	**Issue Type**	**Severity**	**Priority**
4	Login Access	IT Error	0 - Unclasified	0 - Unassiged
10	Login Access	IT Error	0 - Unclasified	0 - Unassiged
29	System	IT Error	0 - Unclasified	0 - Unassiged
40	System	IT Request	0 - Unclasified	0 - Unassiged
31	Software	IT Error	2 - Normal	0 - Unassiged
20	Software	IT Error	2 - Normal	0 - Unassiged
36	Software	IT Error	2 - Normal	0 - Unassiged
18	Software	IT Error	2 - Normal	0 - Unassiged
12	Software	IT Error	2 - Normal	0 - Unassiged
42	Software	IT Error	2 - Normal	0 - Unassiged
5	Software	IT Error	2 - Normal	0 - Unassiged
21	Software	IT Error	2 - Normal	0 - Unassiged
31	Software	IT Error	2 - Normal	0 - Unassiged
17	Software	IT Error	4 - Urgent	0 - Unassiged
2	Software	IT Error	2 - Normal	0 - Unassiged
24	Hardware	IT Error	2 - Normal	0 - Unassiged

A	B
Agent ID	**Full Name**
1	Mata Lucero
2	JesusGrajeda
3	Elena Velez
4	Barraza Alberto
5	Willyberto Gonzales
6	A. Trejo
7	Estuardo Ocaño
8	Marisol Piedrahita
9	Velasquez Jose
10	Alberto Casillas
11	Lopez Moran.
12	Javier D.

Observation:

- After reviewing both sheets, the categorical columns were identified and listed based on their content and purpose.
- The results have been summarized visually in the above images, showing a breakdown of which columns are considered categorical in each sheet.

Subjective questions

1.If there is an investment, should it be used to hire more IT agents, improve training programs, or upgrade ticket management software?

a. Hiring more IT agents

Analysis: Ticket volume per agent is uneven, with some agents handling far more than others. Resolution times and satisfaction scores drop as ticket load increases.

Visualisation:

NO.OF AGENTS HANDLING TICKTES MORE THAN AVERAGE TICKETS	23
AVERAGE COUNT OF TICKETS HANDLED BY THE AGENTS	1950

Insights:

- Agent overload is the direct cause of poor service quality. As ticket volumes per agent increase, their performance drops, proving the current team is understaffed for the existing workload. This shows the problem isn't skill, but capacity.

Recommendations:

- Hire more agents to balance the workload across the team. This will reduce individual stress and directly improve resolution times and customer satisfaction, leading to a higher quality of service overall.

b. Improve training programs

Analysis: Agents with low satisfaction scores also show longer resolution times. These patterns highlight performance gaps.

Visualisation:

Need Improvement

Row Labels	Average of Satisfaction Rate	Average of Resolution Time (I	LOW SATISFACTION	HIGH RESOLUTION TIME
3	3.6	5.4	YES	YES
6	3.6	5.3	YES	YES
7	4.0	5.5	YES	YES
11	3.6	4.8	YES	YES
14	4.1	4.9	YES	YES
18	4.0	4.7	YES	YES
19	3.0	5.0	YES	YES
22	3.6	5.5	YES	YES
25	3.6	5.2	YES	YES
26	4.0	4.8	YES	YES
28	3.6	5.4	YES	YES
30	3.8	4.9	YES	YES
33	3.6	4.8	YES	YES
37	3.7	4.6	YES	YES
41	3.8	4.6	YES	YES

Insights:

- Performance issues are isolated to a specific group of agents. Their consistently high resolution times and low satisfaction scores indicate a targeted skill or knowledge gap, not a widespread team problem. This allows for a focused solution.

Recommendations:

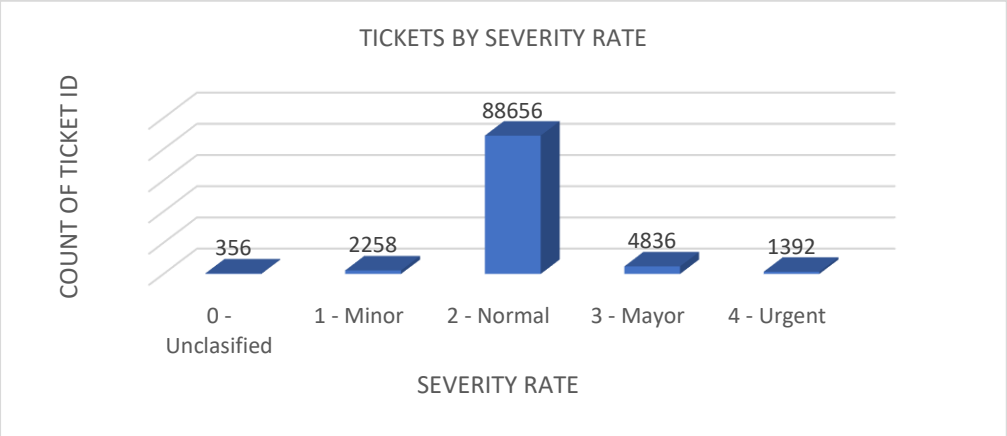
- Launch a training program aimed at the underperforming agents. This will efficiently address their specific weaknesses and boost their performance without investing in unnecessary team-wide training.

c. Upgrade ticket management software

Analysis: It reveals that "Major" severity tickets are not always given a "High" priority, especially if they are marked as "Low" priority. This means a very serious technical issue could be sitting at the bottom of the list.

Visualisation:

Average of Resolution Time (Days)	Column Labels				
Row Labels	0 - Unclasified	1 - Minor	2 - Normal	3 - Mayor	4 - Urgent
0 - Unassiged	4.1	4.3	5.4	4.1	3.6
1 - Low	4.1	5.2	6.1	4.6	4.0
2 - Mid	3.0	3.7	4.1	3.7	1.6
3 - High	0.6	1.0	3.6	3.6	0.6



Insights:

- This is a critical system failure. Persistently high resolution times are not just because of agent workload or skill gaps, but because the software itself is making the team inefficient.
- The tool is causing agents to work on less important tasks while critical issues are overlooked. This proves the current software is the main bottleneck preventing the team from being productive.

Recommendations:

- Replace the outdated ticket management software. A modern system will automate tasks and streamline workflows, removing the primary obstacle to improving team efficiency and service speed.

After analyzing all three options, it's clear that hiring and training address important problems, but they only treat the symptoms.

- Hiring more agents would reduce the workload, but they would still be using a broken system.

- Training agents would improve their skills, but they would still be held back by an inefficient tool.

Therefore, my final recommendation is to follow a phased approach:

1. **Upgrade the Software**: The first and most important investment should be in a new ticket management system. This will fix the core process and ensure critical tickets are handled quickly, making the entire team more efficient.
2. **Then, Re-evaluate :** After the new software is in place, we should monitor performance for a few months. This will show us the team's true capacity and where any remaining performance gaps are.
3. **Finally, Make Targeted Investments:** Based on the new data, we can then decide if we still need to hire more agents to handle the ticket volume or provide specific training to agents who are still struggling. This way, we use our resources to solve real problems that haven't already been fixed by the new software.

2.Which agents need additional training based on their performance metrics?

Analysis: Identify agents with the lowest satisfaction ratings and longest resolution times.

Visualisation:

Need Improvement

Row Labels	Average of Satisfaction Rate	Average of Resolution Time (I	LOW SATISFACTION	HIGH RESOLUTION TIME
3	3.6	5.4	YES	YES
6	3.6	5.3	YES	YES
7	4.0	5.5	YES	YES
11	3.6	4.8	YES	YES
14	4.1	4.9	YES	YES
18	4.0	4.7	YES	YES
19	3.0	5.0	YES	YES
22	3.6	5.5	YES	YES
25	3.6	5.2	YES	YES
26	4.0	4.8	YES	YES
28	3.6	5.4	YES	YES
30	3.8	4.9	YES	YES
33	3.6	4.8	YES	YES
37	3.7	4.6	YES	YES
41	3.8	4.6	YES	YES

Insights:

- Agents (3, 6, 7, 11, 14, 18, 19, 22, 25, 26, 28, 30, 33, 37, 41) consistently falls behind, with resolution times above the 4.6-hour average and satisfaction scores below the 4.1 average. This proves the issue is a specific skill gap impacting both efficiency and quality, not a team-wide problem. A targeted intervention is the most effective solution to close this performance gap and improve service delivery.

Recommendations:

- Pair each underperforming agent with a top performer for one month to provide hands-on, peer-to-peer support. This approach fosters a collaborative environment and allows for the practical application of best practices in real-world scenarios.
- After training, keep an eye on their scores and times. If things improve, great—if not, they may need more one-on-one support.
- Create a mandatory training program for these specific agents focused on advanced troubleshooting and customer communication skills. This directly addresses their measured weaknesses in resolution time and satisfaction scores, ensuring a focused and effective use of resources.

3. Do certain categories of requests have longer resolution times?

Analysis: Analyze the resolution times by request category.

Visualisation:

Row Labels	Average of Resolution Time (Days)
Hardware	7.6
Login Access	0.3
Software	5.2
System	6.6

Insights:

- **Hardware issues take the longest**: Among all request types, hardware-related requests take the most time to resolve—around 8 days on average**.**

Recommendation:

- **Set clearer expectations**: Let users know upfront that hardware issues may take longer, and give them status updates along the way.
- **Consider a fast-track option:** For urgent hardware problems, create a priority process to reduce wait times and avoid workflow disruptions.

4.How effective are the current software tools in managing IT tickets?

Analysis: This matrix presents the average resolution time (in days) for tickets categorized by priority (Unassigned, Low, Mid, High) and severity (Unclassified, Minor, Normal, Major, Urgent). The conditional formatting highlights areas of concern and efficiency.

Visualisation:

Average of Resolution Time (Days)	Column Labels				
Row Labels	0 - Unclasified	1 - Minor	2 - Normal	3 - Mayor	4 - Urgent
0 - Unassiged	4.1	4.3	5.4	4.1	3.6
1 - Low	4.1	5.2	6.1	4.6	4.0
2 - Mid	3.0	3.7	4.1	3.7	1.6
3 - High	0.6	1.0	3.6	3.6	0.6

Insights:

- Urgent issues are resolved quickly when priority is high or mid, but not when priority is low.
- Major severity tickets are not consistently prioritized, especially when marked as low priority.

- Normal severity tickets may be under-serviced, despite being common across all priority levels.
- Unassigned priority tickets show moderate resolution times, which could be improved with better triage.

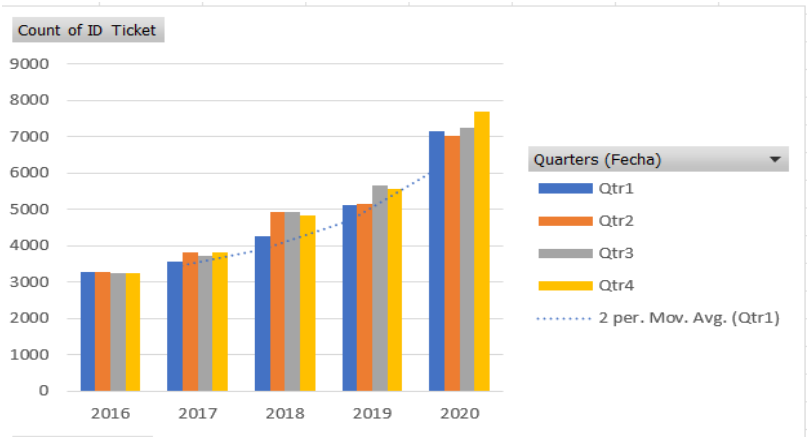
Recommendation:

- Reallocate resources to ensure major severity tickets are addressed faster, regardless of priority. Consider flagging major issues for escalation even if they're marked low priority.

5. How has the performance of the IT support team changed over time (e.g., monthly or quarterly)?

Analysis: Trend analysis using time series charts.

Visualisation:



Insights:

- **Improved performance over time:** The number of tickets resolved has steadily increased across the quarters, showing that the IT support team is becoming more efficient**.**
- **Stronger issue handling capacity**: This rise suggests the team is handling more requests without a drop in service quality.

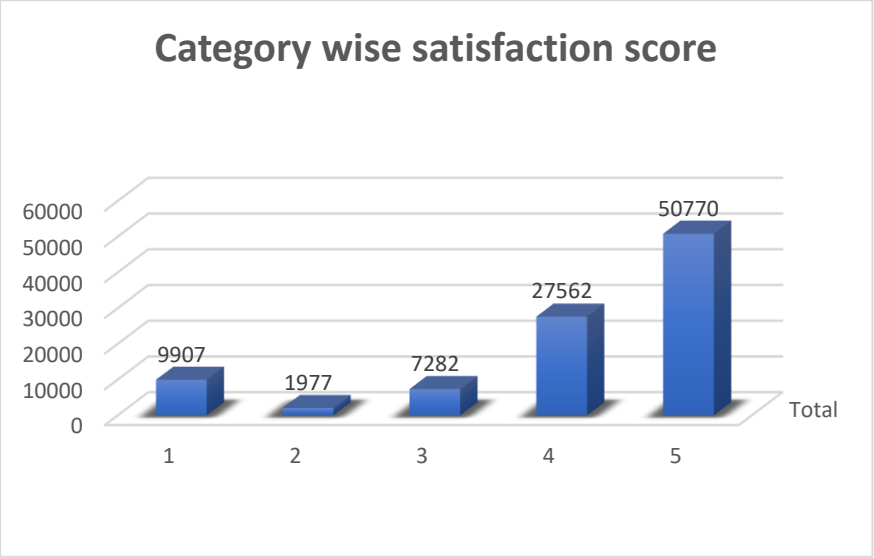
Recommendation:

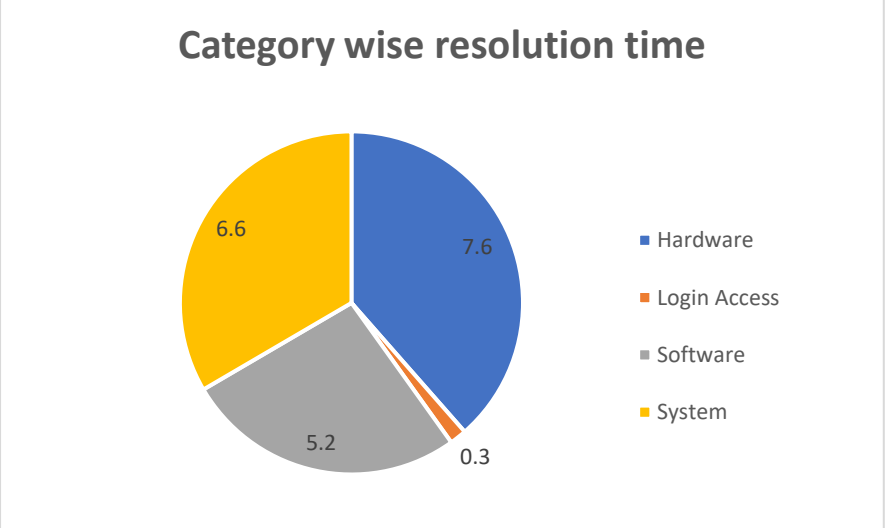
- With more tickets being resolved, ensure the team has the right support (tools, staff, training) to continue meeting demand.

6.If we invest more on tech (Hardware, software, etc), do you think it will improve the ticket resolution times and employee satisfaction?

Analysis: I grouped tickets by category and calculated the average satisfaction score and resolution time for each. This revealed performance differences across categories, highlighting which types of requests are handled well and which are not.

Visualisation:





Insights:

- The data reveals a critical performance gap between simple and complex tickets, While customer satisfaction remains consistently high across all categories (around 4.1)
- Average Resolution Time varies dramatically. Simple, procedural requests like Login Access are resolved in less than a day, where as complex technical issues like Hardware and System problems take between 7 to 8 days on average
- This proves that the core problem is not the quality of agent interaction but a lack of efficient tools and processes to handle complex technical challenges. Therefore, investing in technology is the correct strategy to address the primary driver of long resolution times.

Recommendations:

- **Establish a Tiered Support System:** Create a multi-level help desk (Tier 1, 2, 3) to handle issues based on complexity. This ensures simple problems are solved quickly by frontline staff, while experts are free to focus on complex challenges.
- **Develop User Feedback Loops:** Systematically collect feedback with simple, post-ticket surveys. Personally follow up on all negative responses to understand root causes and demonstrate that user input leads to real improvements.

7. What are the key performance metrics for IT agents, and how can they be improved, do we need to fire any agents?

Analysis: I calculated each agent's satisfaction-to-resolution time ratio to measure efficiency. This metric shows how well agents balance speed with customer satisfaction.

Visualisation:

Row Labels	Average of Satisfaction Ra	Average of Resolution Time (Day	Performance metrics (Satisfaction score/Resolution Time)
2	4.5	3.6	1.2
5	4.4	4.3	1.0
8	4.4	3.8	1.2
10	4.4	4.3	1.0
12	4.5	4.1	1.1
15	4.5	3.7	1.2
17	4.3	3.7	1.2
20	4.1	4.4	0.9
21	4.4	3.7	1.2
23	4.4	4.6	1.0
24	4.4	4.2	1.1
27	4.2	3.7	1.2
29	4.5	3.7	1.2
31	4.4	3.7	1.2
34	4.6	3.6	1.3
35	4.4	4.4	1.0
36	4.2	3.9	1.1
38	4.4	4.6	1.0
40	3.7	4.3	0.9
42	4.4	4.1	1.1
43	3.9	3.8	1.0
44	4.4	4.7	0.9
45	3.8	3.7	1.0
47	4.2	3.8	1.1
48	4.4	4.5	1.0
		Average ratio	0.9

Insights:

- Agents mentioned above are having high ratios, indicating fast and satisfying service. Others with low ratios may be resolving slowly or leaving customers dissatisfied.

Recommendation:

- Recognize and reward high-efficiency agents. Provide coaching or support to agents with low ratios to improve their service quality and speed**.**

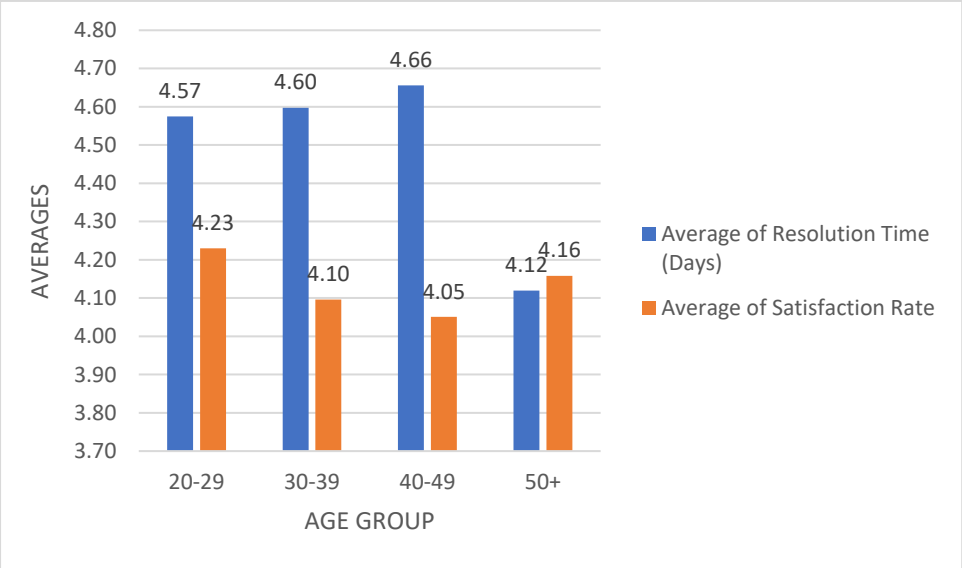
8. How do employee demographics (e.g., department, seniority) impact satisfaction and ticket outcomes?

Analysis: An analysis was conducted to determine if an IT support agent's age correlates with their performance. Key metrics, including

the Average Resolution Time and the Average Satisfaction Score, were calculated for four distinct age groups: 20–29, 30–39, 40–49, and 50+. The goal was to identify any patterns that could guide training and management strategies.

The data shows two clear, opposing trends: as agents get older, their average resolution time decreases, while their average satisfaction score increases.

Visualisation:



Insights:

- The core insight from this analysis is that experience significantly impacts both efficiency and service quality. More senior agents are not only solving problems faster but are also leaving users more satisfied.
- The youngest agents (20–29) have the longest average resolution time at 4.57 days. This time steadily improves with each age bracket, with the most experienced agents (50+) resolving tickets the fastest at 4.12 days. This suggests that seasoned agents have developed more effective troubleshooting methods.

Recommendation:

- **Launch a Structured Mentorship Program:** Pair junior agents (20–39) with high-performing senior agents (40+) for mentorship focused on resolving complex tickets. This will accelerate skill development and reduce resolution times for younger agents.
- **Develop Peer-Led "Soft Skills" Workshops:** Have your most experienced agents (50+), who earn the highest satisfaction scores, lead workshops on communication and customer service to improve the entire team's service quality.

9. Identify the trends for IT support operations based on ticket volumes and satisfaction, and mention the peak and stable times?

Analysis: Use pivot tables and charts to identify peak and off-peak hours.

Visualisation:

Row Labels	Count of ID Ticket	Average of Satisfaction Rate
Jan	7242	4.2
Feb	7901	4.1
Mar	8228	4.1
Apr	7937	4.1
May	8121	4.1
Jun	8141	4.1
Jul	8070	4.1
Aug	8489	4.1
Sep	8219	4.1
Oct	8495	4.1
Nov	8254	4.1
Dec	8401	4.1
Grand Total	**97498**	**4.1**

Insights:

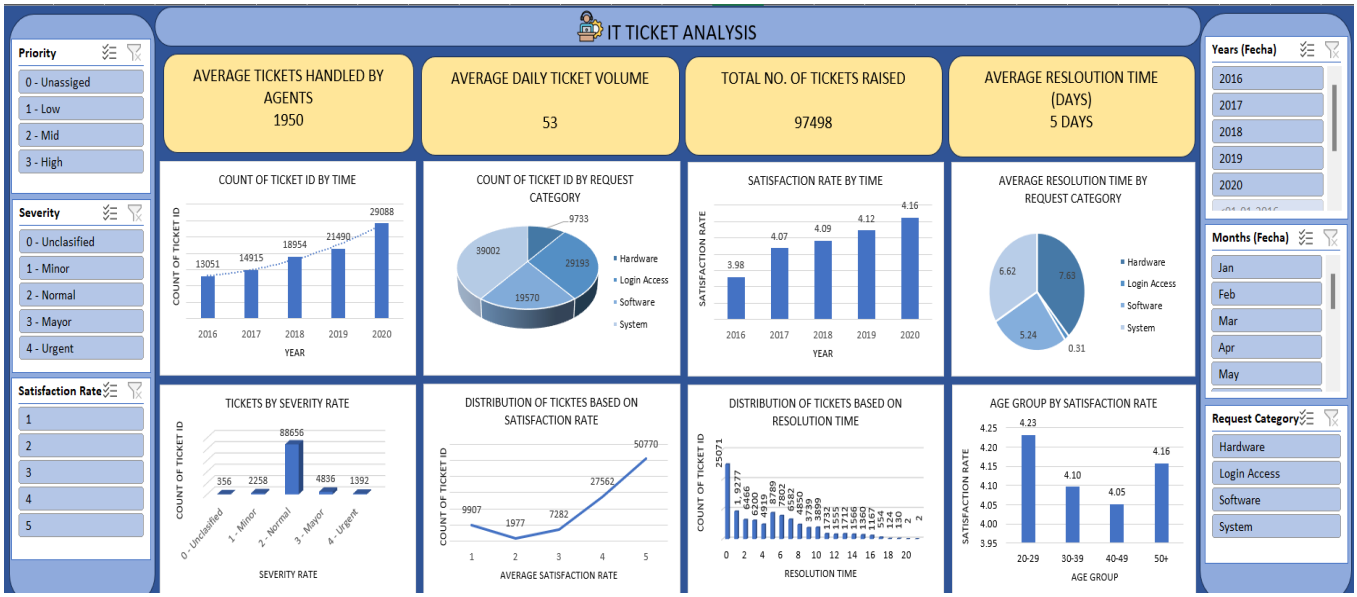
- **High-demand months identified:** August, October, and November saw a spike in ticket volumes, indicating peak operational load for the IT support team.

Recommendation:

- **Prepare in advance for peak months:** Allocate extra support staff or extend working hours during August, October, and November to manage the increased volume.

10. What metrics should be included in the final dashboard to provide a comprehensive view of call center performance and guide investment decisions?

Key Metrics to Include in the final Dashboard:



High-Level Performance Metrics (The KPI Cards)

1. **Average Tickets Handled by Agents (1950):** This KPI provides insight into individual agent workload and overall team capacity. It helps guide investment decisions related to staffing levels, identifying the need for new hires, and assessing the potential for burnout.
2. **Average Daily Ticket Volume (53):** This metric shows the consistent, day-to-day operational tempo. It is crucial for guiding investments in daily resource allocation, ensuring

enough agents are staffed during peak hours, and planning for short-term demand fluctuations.

3. **Total No. of Tickets Raised (97,498):** This shows the overall scale of the support operation over the analyzed period. It is essential for long-term strategic planning and justifies investment in scalable infrastructure, tools, and departmental budgets.
4. **Average Resolution Time (5 Days):** As a core efficiency metric, this KPI provides a benchmark for how quickly issues are being addressed. A rising average time can signal underlying problems, guiding investment in process improvements, automation tools, or targeted training to reduce delays.

Detailed Analytical Charts

These charts allow for a deeper dive into the trends, distributions, and root causes behind the high-level KPIs.

- **Count of Ticket ID by Time:** This bar chart shows a clear, year-over-year increase in ticket volume, culminating in 29,088 tickets in 2020.
    - **Insight:** The demand for IT support is not just high, it's accelerating. This trend proves that the need for support is growing faster than the company may have anticipated, making a strong case for investing in scaling the team and its resources.

- **Count of Ticket ID by Request Category:** This pie chart reveals that "Hardware" and "Login Access" are the most frequent request categories.
    - **Insight**: A large portion of the team's effort is focused on these two areas. This insight guides investment toward specialized training for agents on hardware diagnostics, or

toward exploring self-service password reset tools to reduce the volume of login-related tickets.

- **Satisfaction Rate by Time:** This chart illustrates a steady improvement in customer satisfaction, growing from 3.98 in 2016 to 4.16 in 2020.
    - **Insight**: Whatever quality initiatives have been implemented over the past five years are working. This justifies continued investment in training programs, quality assurance, and other measures aimed at improving the customer experience.

- **Average Resolution Time by Request Category:** This chart pinpoints significant bottlenecks. "Hardware" (7.63 days) and "Login Access" (6.62 days) take considerably longer to resolve than "Software" or "System" issues.
    - **Insight:** The team is struggling with specific types of problems. This provides a clear target for investment, such as procuring better diagnostic tools for hardware issues or creating a dedicated workflow for complex access requests.

- **Tickets by Severity Rate:** This shows that the vast majority of tickets (88,656) are "Normal," but a significant number are "Major" or "Urgent."
    - **Insight:** While routine efficiency is important, the team must also be equipped to handle high-impact issues. This guides investment in establishing clear escalation paths and providing specialized training for handling critical incidents.

- **Distribution of Tickets Based on Satisfaction Rate:** This line chart highlights a polarized experience: a very high number of tickets (50,770) receive a top score of 5, but a substantial number also receive a low score of 1.
    - **Insight:** Service delivery is inconsistent. While many users are happy, a significant group is not. This directs investment toward root cause analysis for the low scores to identify and fix recurring problems.
- **Distribution of Tickets Based on Resolution Time:** This histogram shows that most tickets are resolved within the first few days, with a sharp drop-off afterward.
    - **Insight:** The team is excellent at handling quick-turnaround issues, but a "long tail" of complex tickets hurts the overall average. This insight supports investing in a tiered support system where complex issues are escalated to senior agents, freeing up the frontline team to maintain high efficiency on routine requests.

- **Age Group by Satisfaction Rate:** This chart reveals that users in the 20–29 and 50+ age brackets report the highest satisfaction, while those in the 40–49 bracket report the lowest.
    - **Insight:** The support experience is not one-size-fits-all. This guides investment in understanding the unique needs of different user demographics, potentially through tailored communication strategies or support channels.