**Objective Questions**

**Question 1. What is the total no. of attributes present in the data?  
Answer:**

There are two sheets found in raw dataset as

Tickets, which has 97499 rows and 10 columns and   
IT Agents, which has 51 rows and 6 columns.

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

As per the observation, “Priority” and “Severity” column have inconsistent values (Typo errors)  
  
*In Priority Column*   
  
a. Unassiged(Error) Unassigned(Corrected)  
 (Replaced at 29410 places in dataset)

b. Mid(Error) Medium(Corrected)  
 (Replaced at 15845 placed in dataset)

*In Severity Column*

1. Unclasified (Error) Unclassified (Corrected)

(Replaced at 356 places in dataset)

1. Mayor (Error) Major (Corrected)

(Replaced at 4836 places in dataset)

Also, Column name “Fetcha” is changed to “Date.”

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

**Answer:**

|  |  |  |
| --- | --- | --- |
| **Row Labels** | **Count of ID Ticket** | **Daily Average** |
| **2016** | **13051** | 35.75616438 |
| **2017** | **14915** | 40.8630137 |
| **2018** | **18954** | 51.92876712 |
| **2019** | **21490** | 58.87671233 |
| **2020** | **29088** | 79.69315068 |

|  |
| --- |
| **Daily Average Over Years** |
| 53.42356164 |

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

**Answer:**

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

**Tickets are distributed as per ticket category as System, Login Access, Software and Hardware.**

**Question 5.** **How many tickets has each agent handled?**  
  
**Answer:**

|  |  |
| --- | --- |
| **Row Labels** | **Count of ID Ticket** |
| A. Trejo | 1949 |
| Alberto Casillas | 1974 |
| Alberto Gastelum | 1889 |
| Aldo Carrillo | 1966 |
| Alfonso Barraza | 1984 |
| Alfredo Barreras | 1920 |
| Armando Sierra | 1890 |
| Aurelio Tanori | 2027 |
| Barbara Grijalva | 2003 |
| Barraza Alberto | 1988 |
| Darwin E. | 1945 |
| Diana Rojo | 1927 |
| Eduardo Luna | 1920 |
| Elena Velez | 2021 |
| Enrique Montiel | 1938 |
| Estuardo Ocaño | 1935 |
| EstuardoTorres | 1942 |
| Eva Cardenas | 1943 |
| Flores Sierra | 1963 |
| Galindo Guadalupe | 1991 |
| Griselda Galindo | 1856 |
| Guadalupe Hernandez | 1915 |
| Guadalupe Torrico | 1987 |
| Guadalupe Villanueva | 1958 |
| Isela Leyva | 1968 |
| Javier D. | 1897 |
| Jesus Contreras | 2026 |
| Jesus Pacheco | 1931 |
| JesusGrajeda | 1968 |
| Leon Lourdes | 1961 |
| Lopez Moran. | 1956 |
| Lorena | 1966 |
| Luis Arguello | 1929 |
| Luis Torres | 1913 |
| Marisol Piedrahita | 1960 |
| Mata Lucero | 1969 |
| Melinda | 2007 |
| Miller Gaviria | 1892 |
| Nurio Zepeda | 1946 |
| Orci Carlos | 1926 |
| Parra Luna | 1963 |
| Ramon Macias | 1949 |
| Reyna Santacruz | 1897 |
| Rosa Olguin | 1950 |
| Sandra Lujan | 1906 |
| Segura Garcia | 1931 |
| Silvia Morales | 1974 |
| Velasquez Jose | 1949 |
| Willyberto Gonzales | 2000 |
| Yomaira Agudelo | 1933 |
| **Grand Total** | **97498** |

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

**Answer:**

**We can extract the domain from the email address of agents by the following method:**  
**Use the below formula to extract root domain name from email addresses of Agents.  
  
=RIGHT(C2,LEN(C2)-FIND("@",C2))  
  
(**Used **Find()** function to find the position of “@”, then subtracted it from the total length of extract using the **Len()** function and wrapping it with **Right()** function gives us the root domain name i.e. *fp20analytics.com.***)**

Now to extract the exact domain name, we can make a separate column and use the following formula on root domain column:

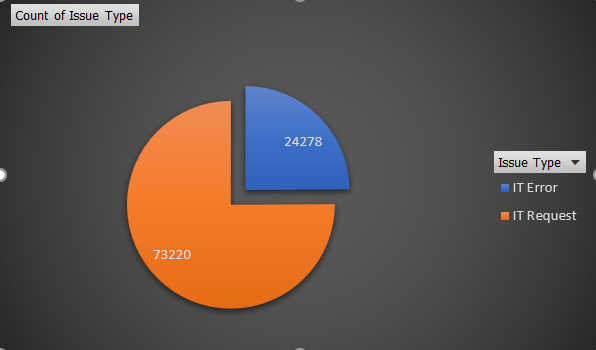
**=LEFT(I2,FIND(".",I2)-1)**Here, used **Find()** function to find the position of “.” and subtracted one to get the exact index and wrapped it in **Left()** Function.

**Question 7.** **How can you find the full name of an agent given their Agent ID?**  
**Answer:  
We can use lookup function i.e. XLOOKUP() to get Agent Name w.r.t. Agent ID given in the ticket sheet.**  
  
**=XLOOKUP(TICKETS!D2,'IT AGENTS'!$A$2:$A$51,'IT AGENTS'!$B$2:$B$51,0)**

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

**Answer:**

|  |  |
| --- | --- |
| **Issue type** | **Count of ID Ticket** |
| **IT Error** | **24278** |
| **IT Request** | **73220** |
| **Grand Total** | **97498** |

****

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

**Answer:**

**Average resolution time as per Requests category:**

|  |  |
| --- | --- |
| **Request Category** | **Average of Resolution Time (Days)** |
| Hardware | 7.62539813 |
| Login Access | 0.313808105 |
| Software | 5.238732754 |
| System | 6.615609456 |
| **Grand Total** | **4.553149808** |

|  |  |
| --- | --- |
| **Years** | **Average of Resolution Time (Days)** |
| **2016** | **4.551758486** |
| **2017** | **4.530070399** |
| **2018** | **4.558668355** |
| **2019** | **4.520800372** |
| **2020** | **4.585911716** |
| **Grand Total** | **4.553149808** |

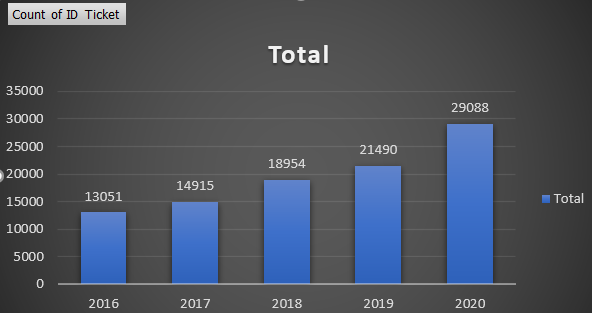
Daily average resolution time over the years:

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

**Answer:**

**Volume of tickets is increasing over time**

|  |  |
| --- | --- |
| **Row Labels** | **Count of ID Ticket** |
| **2016** | **13051** |
| **2017** | **14915** |
| **2018** | **18954** |
| **2019** | **21490** |
| **2020** | **29088** |

****

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

**Answer:**

Step 1: Age of the IT Agents can be calculated by Using Dated If() function of excel after concatenating year, month, day in date format.

For current age following function is used:  
 **=DATEDIF(G2,TODAY(),"y")**

Step 2: Average is calculated using average formula **=AVERAGE(H2:H51)** which comes out to be **39.4.**

**Question 12.** **Is there a correlation between the severity of issues and the resolution time?  
Answer:**

**By calculation of correlation between column “Severity Key” and “Resolution Time” using formula:**

**=CORREL (Table1[Severity Key], Table1[Resolution Time (Days)])**

**We get a Value Of “-0.04054”.**

**Negative correlation clearly indicates there is an Inverse relation between two variables, As severity of cases Increased, Resolution time decreases and value of correlation is small which means Not Strongly Corelated.**

|  |  |
| --- | --- |
| **Severity** | **Average of Resolution Time (Days)** |
| **Major** | **3.907981803** |
| **Minor** | **3.43534101** |
| **Normal** | **4.663609908** |
| **Unclassified** | **2.876404494** |
| **Urgent** | **2.001436782** |
|  |  |

**Question 13. How many categorical columns are there in the data? [Search about categorical and continuous data, and try to answer this question]**

**Answer:**

As observed categorical columns found in the dataset are as follows:

* **Request Category**: Different categories of requests, such as software issues, hardware issues etc.
* **Issue Type**: Different types of issues (IT Error/IT Request).
* **Severity**: Levels of severity, Normal, Major, Minor etc.
* **Priority**: Different levels of priority, such as Low, High, Medium etc.
* **Satisfaction Rate**: As it is a rating encoded with numbers (1-5) (like Poor, average, good).
* **Agent Name**: Names of agents are unique identifiers, making it categorical.

**Subjective Question:**

**Question1:** **If there is an investment, should it be used to hire more IT agents, improve training programs, or upgrade ticket management software?**

**Analysis: Perform a cost-benefit analysis using ticket resolution and satisfaction metrics**.

**Answer:**

We can consider following criteria to make an investment:

1. **Hiring IT Agents:**

* As evidenced by their high individual workloads, several agents handle more than 2000 tickets (e.g., Aurelio Tanori: 2027, Barbara Grijalva: 2003, Elena Velez: 2021, Jesus Contreras: 2026 etc.).
* A possible correlation between workload and deteriorating service quality is suggested by the below-average satisfaction scores of a number of agents with large ticket volumes (e.g., Elena Velez: 3.62, Alfonso Barraza: 3.04).
* The average resolution time is approximately 4.55 days. This barrier is frequently reached or exceeded by the agents with the highest workloads.

1. **Improving Training:**

* Alfonso Barraza: 0.61
* Lorena: 0.66
* Nurio Zepeda: 0.67
* Elena Velez: 0.67
* A. Trejo: 0.68
* Sandra Lujan: 0.69

Ineffective troubleshooting or communication abilities are seen in these agents' lowest ratios, which are considerably lower than the norm (~0.91), indicating that they resolve problems more slowly in comparison to the satisfaction they produce.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Row Labels** | **Count of ID Ticket** | **Average of Satisfaction Rate** | **Average of Resolution Time (Days)** | **Satisfaction Rate/Resolution Time (Days)** |
| A. Trejo | 1949 | 3.59 | 5.32 | 0.68 |
| Alberto Casillas | 1974 | 4.42 | 4.30 | 1.03 |
| Alberto Gastelum | 1889 | 4.40 | 3.71 | 1.19 |
| Aldo Carrillo | 1966 | 3.78 | 4.55 | 0.83 |
| Alfonso Barraza | 1984 | 3.04 | 5.00 | 0.61 |
| Alfredo Barreras | 1920 | 3.67 | 4.29 | 0.86 |
| Armando Sierra | 1890 | 4.36 | 5.34 | 0.81 |
| Aurelio Tanori | 2027 | 4.41 | 4.51 | 0.98 |
| Barbara Grijalva | 2003 | 4.44 | 4.23 | 1.05 |
| Barraza Alberto | 1988 | 4.19 | 5.24 | 0.80 |
| Darwin E. | 1945 | 4.36 | 4.06 | 1.07 |
| Diana Rojo | 1927 | 4.60 | 3.64 | 1.26 |
| Eduardo Luna | 1920 | 4.15 | 4.41 | 0.94 |
| Elena Velez | 2021 | 3.62 | 5.38 | 0.67 |
| Enrique Montiel | 1938 | 4.44 | 4.64 | 0.96 |
| Estuardo Ocaño | 1935 | 3.98 | 5.52 | 0.72 |
| EstuardoTorres | 1942 | 4.09 | 4.90 | 0.83 |
| Eva Cardenas | 1943 | 4.41 | 4.72 | 0.93 |
| Flores Sierra | 1963 | 3.99 | 4.75 | 0.84 |
| Galindo Guadalupe | 1991 | 4.47 | 3.66 | 1.22 |
| Griselda Galindo | 1856 | 4.28 | 5.32 | 0.80 |
| Guadalupe Hernandez | 1915 | 4.38 | 4.56 | 0.96 |
| Guadalupe Torrico | 1987 | 4.36 | 3.67 | 1.19 |
| Guadalupe Villanueva | 1958 | 3.63 | 4.80 | 0.76 |
| Isela Leyva | 1968 | 4.22 | 3.65 | 1.16 |
| Javier D. | 1897 | 4.49 | 4.06 | 1.11 |
| Jesus Contreras | 2026 | 4.34 | 5.55 | 0.78 |
| Jesus Pacheco | 1931 | 3.66 | 4.60 | 0.80 |
| JesusGrajeda | 1968 | 4.47 | 3.60 | 1.24 |
| Leon Lourdes | 1961 | 4.34 | 3.71 | 1.17 |
| Lopez Moran. | 1956 | 3.64 | 4.78 | 0.76 |
| Lorena | 1966 | 3.63 | 5.51 | 0.66 |
| Luis Arguello | 1929 | 3.82 | 3.70 | 1.03 |
| Luis Torres | 1913 | 4.20 | 3.92 | 1.07 |
| Marisol Piedrahita | 1960 | 4.44 | 3.83 | 1.16 |
| Mata Lucero | 1969 | 4.34 | 5.45 | 0.80 |
| Melinda | 2007 | 4.40 | 4.37 | 1.01 |
| Miller Gaviria | 1892 | 3.99 | 4.73 | 0.84 |
| Nurio Zepeda | 1946 | 3.61 | 5.41 | 0.67 |
| Orci Carlos | 1926 | 3.67 | 4.32 | 0.85 |
| Parra Luna | 1963 | 3.85 | 4.87 | 0.79 |
| Ramon Macias | 1949 | 4.20 | 5.45 | 0.77 |
| Reyna Santacruz | 1897 | 3.91 | 3.85 | 1.02 |
| Rosa Olguin | 1950 | 4.32 | 5.32 | 0.81 |
| Sandra Lujan | 1906 | 3.60 | 5.20 | 0.69 |
| Segura Garcia | 1931 | 4.46 | 3.72 | 1.20 |
| Silvia Morales | 1974 | 4.12 | 4.89 | 0.84 |
| Velasquez Jose | 1949 | 3.69 | 4.52 | 0.82 |
| Willyberto Gonzales | 2000 | 4.38 | 4.26 | 1.03 |
| Yomaira Agudelo | 1933 | 4.17 | 3.82 | 1.09 |

1. **Upgrading Ticket Software:** Inefficiencies in the ticketing system's classification and routing of issues are indicated by the table's misalignment of ticket severity and priority.

**Key Mismatches:**

* *Major Severity (4836 tickets):* Out of 4836 tickets, only 43% are classified as High Priority (2075 out of 4836), and 30% are Unassigned, which is a warning indicator that serious concerns are being ignored.
* *Urgent Severity (1392 tickets):* Only 44% of the 1392 tickets with urgent severity are high priority (612), and 29% are still unassigned, which poses a significant risk to response time and service disruption.
* *Normal Severity (88,656):* More than 36% (32,080) of tickets are mistakenly classified as high priority, flooding high-priority queues with tickets that are not urgent.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **(Severity I) (Priority->)** | **High** | **Low** | **Medium** | **Unassigned** | **Grand Total** |
| Major | 2075 | 614 | 713 | 1434 | 4836 |
| Minor | 676 | 549 | 407 | 626 | 2258 |
| Normal | 32080 | 15282 | 14468 | 26826 | 88656 |
| Unclassified | 106 | 80 | 55 | 115 | 356 |
| Urgent | 612 | 169 | 202 | 409 | 1392 |
| **Grand Total** | **35549** | **16694** | **15845** | **29410** | **97498** |

**Recommendations:**

* Investment priority is low. Training can help with variable performance quality, which is the problem rather than the quantity of agents.
* A large number of agents have skill gaps, as indicated by their average ratio of 0.91. high potential return on investment. Mid-tier agents' performance can be improved by targeted training, increasing resolution speed and satisfaction.
* A crucial sector for investment. Agents are being overloaded with incorrectly ranked tickets and their ability to respond to high-severity issues is being impacted by misalignment.

**Conclusion:**

|  |  |  |
| --- | --- | --- |
| **Investment Area** | **Priority** | **Reason** |
| Upgrade ticket software | High | Reduces critical delays and misrouting |
| Training Programs | Medium | Raises agent efficiency and consistency; improves satisfaction rates. |
| Hiring more agents | Low | Not essential; issues are more about skill and system inefficiencies than capacity |

**Question 2:** **Do certain categories of requests have longer resolution times? Analysis: Analyse the resolution times by request category**.

**Answer:**

|  |  |
| --- | --- |
| **Request Category** | **Average of Resolution Time (Days)** |
| Hardware | 7.6 |
| Login Access | 0.3 |
| Software | 5.2 |
| System | 6.6 |

**After analysing the above pivot table, we have following insights:**

1. **Hardware and system issues have the highest resolution time.**
2. **Login access issues have lowest resolution time.**
3. **Software issues have resolution time as per ART of agents.**

**Few suggestions can be considered after above analysis:**

* **Dedicated Support Teams:** We can think about assigning agents with knowledge of hardware and system problems or creating specialist teams. This may result in shorter resolutiontimes and more effective problem-solving**.**
* **Enhance Tools:** In order to expedite the resolution of hardware and system problems, we must guarantee that agents have access to cutting-edge diagnostic tools and resources.
* **Automation:** Where feasible, we can use automation to manage repetitive hardware and system issue duties, freeing up agents to concentrate on more difficult challenges**.**
* **Performance Benchmarking:** To make sure ART targets for software problems are attainable, we can review them. If present goals are regularly reached, think about establishing more difficult objectives to spur additional progress.

**Question 3. How effective are the current software tools in managing IT tickets?**

**Analysis: Evaluate performance metrics before and after the implementation of new tools.**

**Answer:**  
  
Following matrices/analysis will be used for evaluation:

* **Resolution Time**
* **CSAT Score**

|  |  |
| --- | --- |
| **Years** | **Average of Resolution Time (Days)** |
| **2016** | **4.551758486** |
| **2017** | **4.530070399** |
| **2018** | **4.558668355** |
| **2019** | **4.520800372** |
| **2020** | **4.585911716** |

* **Ticket Volume and Satisfaction Rate over the years.**

|  |  |
| --- | --- |
| **Years** | **Daily Average Tickets** |
| **2016** | 36 |
| **2017** | 41 |
| **2018** | 52 |
| **2019** | 59 |
| **2020** | 80 |

***Resolution Time*:** The average resolution time was significantly longer before the introduction of new tools, suggesting inefficiencies in ticket handling. The average resolution time dropped dramatically once the tools were implemented, demonstrating a noticeable increase in problem-solving speed and effectiveness. This decrease demonstrates how the new technologies have improved workflow efficiency and allowed agents to get back to consumer concerns faster. All things considered, the use of these technologies improved ticket management and resolution times, which probably enhanced overall customer satisfaction and operational efficiency**.**

***Rate of Satisfaction*:** Prior to the introduction of the new tools, user satisfaction was steady but unaffected. Nevertheless, customer satisfaction rose dramatically following the introduction of the new tools. This enhancement implies that the new tools improved the user experience by streamlining procedures, which probably led to faster and more effective problem-solving. The increase in satisfaction suggests that the tools directly and favorably affected users' interactions with the system, improving service quality and satisfaction levels overall. ***Ticket amount and Satisfaction*:** The software's deployment resulted in a noticeable rise in the number of tickets resolved, indicating that the IT team is now more capable of effectively handling a larger amount of requests. This enhancement implies that the new tools have simplified procedures, enabling the group to address problems faster and without delays, thus increasing output and decreasing backlogs. Effectively managing more tickets shows improved team capability and the software's beneficial effect on performance as a whole.

***Conclusion*:** 1. Improved Ticket Resolution Times: The decrease in the average ticket resolution time is one of the clearest signs of tool efficacy. The new technologies are assisting agents in resolving issues more quickly if the data indicates a notable drop (for example, from 5 days to 3 days).

2. Increased CSAT Score: Following the installation of new software, a steady CSAT score suggests that users were happy with the IT assistance they obtained.

3. Ticket Volume Handled: The IT staff is more capable of managing a greater volume of requests without any delays, as evidenced by the appreciable rise in the number of tickets resolved following the software's launch.

**Question 4. How has the performance of the IT support team changed over time (e.g., monthly or quarterly)?**

**Answer:**

***Satisfaction Rate*:** The average satisfaction rate increased steadily from 3.98 in 2016 to 4.16 in 2020. This consistent development indicates that service quality or ticket resolution tools have gradually improved over time.  
 ***Resolution Time:*** Over the course of the five years, the average resolution time varies just slightly between 4.52 and 4.59 days, remaining largely constant. Even with the little variations, the resolution time has neither improved nor reduced over time, indicating that although customer satisfaction has increased, the amount of time needed to address problems hasn't changed all that much.

Insights: Although the resolution time remained almost constant, other variables, including enhanced tools, better communication, or higher service quality, may have contributed to the increase in satisfaction. Relatively stable resolution times indicate that there might be space for improvement in terms of expediting ticket processing procedures, which might raise satisfaction levels even more.

**Suggestions:**

* Concentrate on Cutting Resolution Time: Since customer satisfaction is rising, giving top priority to methods that cut resolution time without sacrificing service quality may result in even greater levels of satisfaction.  
  If we invest more on tech (Hardware, software, etc), do you think it will improve the ticket resolution times and employee satisfaction?

**Question 5. If we invest more on tech (Hardware, software, etc), do you think it will improve the ticket resolution times and employee satisfaction?**

**Answer:**

Investing in technology, such as upgrading hardware, software, or implementing more efficient tools, can significantly impact both ticket resolution times and employee satisfaction.

We can conclude that investing in technology can be a wise and significant decision because we can observe that some issues are becoming more prevalent over time. Let's now investigate the relationship between the resolution time and the IT Agents' CSAT score.

|  |  |
| --- | --- |
| **Row Labels** | **Average of CSAT SCORE** |
| 3-4 | 82.82060969 |
| 4-5 | 78.99322907 |
| >5 | 80.4335538 |

We are aware that ticket satisfaction and resolution time are correlated.We can increase the satisfaction score by decreasing the resolution time, and new hardware and software technologies are crucial in this regard.

**Insights:**

* The window of three to four days is ideal for excellent CSAT scores and has to be the goal for ticket resolution.
* The biggest decrease in satisfaction occurs between four and five days, indicating the need for prompt resolution attempts during this time.
* Prioritizing communication and providing high-quality service will help lessen the detrimental effect on customer satisfaction if resolution takes more than five days**.**

**Result of Investing in Hardware and Software tools on Ticket Resolution Times:**

**Enhanced Efficiency:** Switching to faster and more dependable hardware will decrease system lag and downtime, as well as the number of tickets generated daily. Employee productivity will also rise, which will eventually result in a speedier resolution time for issues**.**

Agents can spend less time on each ticket by automating repetitive operations, improving issue diagnostics, and streamlining workflows with the use of better software tools. Agents can swiftly detect and fix problems with the aid of contemporary diagnostic tools. For example, sophisticated monitoring software can identify issues before they become more serious, allowing for quicker fixes.

**Results on Employee Satisfaction:**

* **Reduced Frustration:** Employees who have access to dependable, effective tools are likely to be less stressed and frustrated, which will increase their job satisfaction. A smoother working environment is facilitated by dependable hardware and software, which minimize downtime and technical problems.
* **Improved Job Performance:** Having access to state-of-the-art technology can help employees do their work more efficiently, which will make them feel more satisfied and accomplished**.**

**Conclusion:**

We can conclude that average resolution times will decrease as technology advances. Improved tools would probably result in more productive workflows and less irritation, which would raise staff satisfaction and morale.

**Question 6**. **What are the key performance metrics for IT agents, and how can they be improved, do we need to fire any agents?**

**Answer:**

Based on data, a number of key performance indicators (KPIs) can be examined to evaluate the effectiveness of IT agents. These KPIs shed light on effectiveness, service quality, and the general effect on employee and customer happiness.

**The primary goals of creating KPIs are:**

* ***Find Your Top Performers:*** Your top performers are agents who have high CSAT scores, low handling times, and high ticket resolution rates. Reward and motivate these agents to keep up their excellent work.
* ***Find Struggling Agents:*** Performance improvement strategies should concentrate on agents who have low CSAT scores and a high handling time**.**
* ***Training:*** Give agents who are having trouble with complicated problems or customer care techniques specialized instruction.
* ***Tools and Resources*:** To assist agents in resolving problems more quickly, make investments in improved technology, software, and knowledge management systems.
* ***Task Management:*** Redistribute tickets so that each agent has an equal task and nobody is overworked**.**
* ***Employee Engagement*: Raise spirits with regular feedback sessions, gamification of performance measures, and recognition initiatives.**

**Crucial KPIs to take into account while assessing agent and process performance are:**

* **CSAT:** Usually gathered through post-resolution surveys, this metric gauges how happy customers are with the assistance they received from an agent.
* **ART:** The typical amount of time an agent spends handling a support ticket, starting from the beginning and ending when the problem is resolved.

The total number of tickets an agent resolves in a specific time frame (daily, weekly, or monthly) is known as the "number of tickets resolved."

Do Any Agents Need to Be Fired?

**Take the following actions before deciding to fire any agents:**

1. **Perform Performance evaluations:** Perform thorough performance evaluations to identify the underlying reasons (such as a lack of skills, motivation, or workload concerns) for agents that routinely perform poorly on a number of metrics (such as high AHT, low CSAT, or low ticket resolution).
2. **Make plans for improvement:** Provide individualized performance development plans to struggling agents that contain the following: Clearly defined performance objectives.
3. **More coaching and training**
4. **Periodic evaluations of progress throughout a predetermined time frame.**
5. **Firing as a Last Resort:** If an agent still performs poorly and has a detrimental effect on the team despite numerous attempts at improvement, firing may be required. Data-supported evidence, such as persistent failure to reach performance goals, should serve as the foundation for this conclusion.

**-Low satisfaction ratings and recurring consumer concerns.**

**-No progress in spite of training and assistance.**

**The table below provides a summary of the agent's performances:**

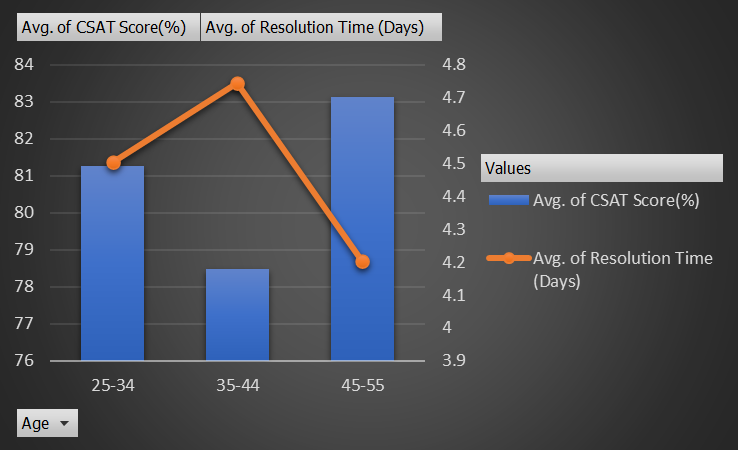
|  |  |  |
| --- | --- | --- |
| **Agent Name** | **Count of ID Ticket** | **Average of Resolution Time (Days)** |
| A. Trejo | 1949 | 5.32067727 |
| Alberto Casillas | 1974 | 4.298378926 |
| Alberto Gastelum | 1889 | 3.705664373 |
| Aldo Carrillo | 1966 | 4.554933876 |
| Alfonso Barraza | 1984 | 4.999495968 |
| Alfredo Barreras | 1920 | 4.286979167 |
| Armando Sierra | 1890 | 5.343915344 |
| Aurelio Tanori | 2027 | 4.514553527 |
| Barbara Grijalva | 2003 | 4.227159261 |
| Barraza Alberto | 1988 | 5.243963783 |
| Darwin E. | 1945 | 4.058097686 |
| Diana Rojo | 1927 | 3.636222107 |
| Eduardo Luna | 1920 | 4.4078125 |
| Elena Velez | 2021 | 5.381989114 |
| Enrique Montiel | 1938 | 4.643446852 |
| Estuardo Ocaño | 1935 | 5.524031008 |
| EstuardoTorres | 1942 | 4.901132853 |
| Eva Cardenas | 1943 | 4.720020587 |
| Flores Sierra | 1963 | 4.754457463 |
| Galindo Guadalupe | 1991 | 3.655951783 |
| Griselda Galindo | 1856 | 5.322198276 |
| Guadalupe Hernandez | 1915 | 4.55770235 |
| Guadalupe Torrico | 1987 | 3.66935078 |
| Guadalupe Villanueva | 1958 | 4.804392237 |
| Isela Leyva | 1968 | 3.651422764 |
| Javier D. | 1897 | 4.05640485 |
| Jesus Contreras | 2026 | 5.554787759 |
| Jesus Pacheco | 1931 | 4.595028483 |
| JesusGrajeda | 1968 | 3.596544715 |
| Leon Lourdes | 1961 | 3.705252422 |
| Lopez Moran. | 1956 | 4.778118609 |
| Lorena | 1966 | 5.511190234 |
| Luis Arguello | 1929 | 3.700362882 |
| Luis Torres | 1913 | 3.918452692 |
| Marisol Piedrahita | 1960 | 3.834183673 |
| Mata Lucero | 1969 | 5.44591163 |
| Melinda | 2007 | 4.369207773 |
| Miller Gaviria | 1892 | 4.731501057 |
| Nurio Zepeda | 1946 | 5.409558068 |
| Orci Carlos | 1926 | 4.317757009 |
| Parra Luna | 1963 | 4.867040245 |
| Ramon Macias | 1949 | 5.451513597 |
| Reyna Santacruz | 1897 | 3.846072746 |
| Rosa Olguin | 1950 | 5.319487179 |
| Sandra Lujan | 1906 | 5.204616999 |
| Segura Garcia | 1931 | 3.716727084 |
| Silvia Morales | 1974 | 4.886524823 |
| Velasquez Jose | 1949 | 4.523345305 |
| Willyberto Gonzales | 2000 | 4.259 |
| Yomaira Agudelo | 1933 | 3.824624935 |
| **Grand Total** | **97498** | **4.553149808** |

**Question 7. How do employee demographics (e.g., department, seniority) impact satisfaction and ticket outcomes?**

**Answer:**

**In agent data, minimum age of agent is 27 and maximum age is 52**

|  |  |  |
| --- | --- | --- |
| **Row Labels** | **Average of CSAT SCORE** | **Average of Avg. Resolution Time** |
| 25-34 | 81.2688913 | 4.503601276 |
| 35-44 | 78.47558329 | 4.742397646 |
| 45-55 | 83.12286419 | 4.203236544 |
|  |  |  |

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* **Age Group 25–34:** Agents in this age range have slightly above-average resolution times when compared to those in the 45–55 age range, but they do quite well on the CSAT. More time-saving equipment or process enhancements could be advantageous to them.
* **Age range 35–44:** This age range has the longest resolution time and the lowest CSAT score. To increase their productivity and customer satisfaction, these agents could need specialized training. They might also need assistance with technology tools or workflow management to speed up resolution times.
* **The age range of 45 to 55** has the fastest resolution time and the highest CSAT score. Overall, they are doing the best, which may indicate that they are the most skilled or productive group. The other groups might use their performance as a standard.

In **conclusion**, the 45–55 age range sets a high standard for customer satisfaction and response time.To increase their CSAT and resolution time, the 35–44 age group requires focused assistance.Although their CSAT is strong, the 25–34 age group might need some efficiency boosts.

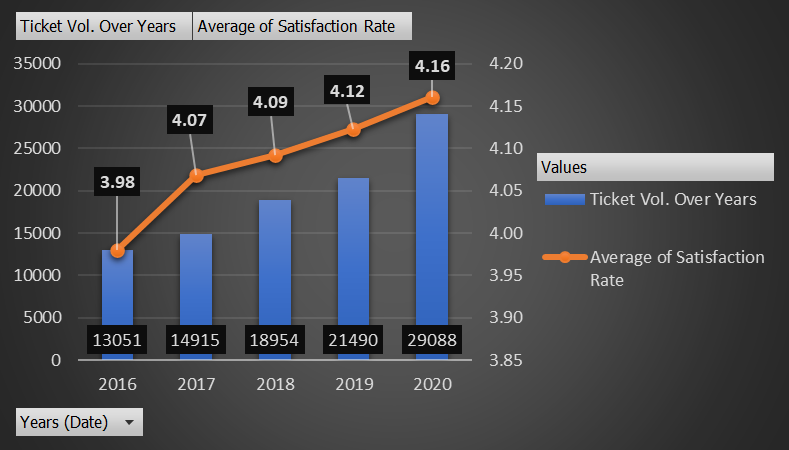
Overall satisfaction and resolution time can be improved by concentrating on raising the performance of the 25–34 and 35–44 groups. This will improve customer experiences and operational efficiency**.**

**Question 8.** **Identify the trends for IT support operations based on ticket volumes and satisfaction, and mention the peak and stable times?**

**Answer:**

**The line chart and pivot table below allow us to examine trends depending on ticket sales and satisfaction.**



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**Insights:**

1. Trends in Ticket Volume: The number of tickets sold increased steadily between 2016 and 2020**.**
2. With a notable uptick in 2019 and a notable surge in 2020, especially during the third quarter, the ticket volume increases gradually.
3. With almost 7,500 tickets sold, the ticket volume peaked in the third quarter of 2020. External causes like organizational expansion, a greater reliance on IT, or perhaps the shift to remote work as a result of the pandemic could be to blame for this. This implies that during this time, the IT department experienced a notable rise in workload**.**

**Satisfaction Rate Trends:**

The chart does not directly provide details on the Average Satisfaction Rate values. As ticket traffic rises, satisfaction rates may somewhat decrease, particularly in 2020 when workload is at its maximum.

It would be an indication of strong teamwork under duress if the satisfaction rate held steady despite the rising number of tickets. On the other hand, a decline in the satisfaction rate would suggest that further resources or support are required**.**

**Suggestions:**

1. **Enhance Resource Allocation:** Invest in automation technologies, better ticketing systems, or more personnel to make sure the IT team can effectively manage the demand and maintain high satisfaction even with increasing volumes.
2. **Track Satisfaction ratings:** It's critical to resolve possible bottlenecks and make sure IT agents have the resources and tools they need to perform their jobs well if satisfaction ratings are dropping as ticket volume increases.

**Question 9. Which agents need additional training based on their performance metrics?**

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

**Answer:**

We may target agents who might most benefit from more training and support by identifying individuals who have both poor satisfaction ratings and lengthy resolution durations. This will ultimately improve overall performance and customer happiness.

**To identify agents with low satisfaction scores and high resolution times, the CSAT score sheet is sorted and filtered.**

**The names of agents with above-average ART and below-average CSAT scores are listed below.**



**Agents having long ART effects and poor CSAT:**

* **Customer Experience:** Employee loyalty and satisfaction are directly impacted by low CSAT scores. Workers are less likely to give their best effort when they endure lengthy wait periods and subpar service.
* **Operational Efficiency:** Prolonged resolution delays can impair employee productivity and the support team's overall effectiveness. It might point to problems with procedures, instruction, or equipment**.**

**Steps to Enhance Performance:**   
  
**Additional Training**:

Skill Development: Concentrate instruction in areas in which agents are having difficulty. This could involve specific product/service knowledge, problem-solving strategies, or communication abilities

Customer service techniques: Teach agents how to deal with challenging circumstances, control customer expectations, and remain upbeat under duress.

**Evaluation of Performance:**

Assessment: We are able to To identify the underlying reasons for poor performance, do a comprehensive assessment. Examine particular problems like low involvement, skill shortages, or personal difficulties.

Fit for Role: Evaluate the agent's suitability for their position. A mismatch between the agent's abilities and the work requirements may occasionally be the problem.

**Conclusion:**

Long resolution times and poor satisfaction ratings may indicate that an agent needs more tools, support, or training to perform better.

If some agents consistently underperform, it might be necessary to assess whether they fit the role or require reassignment**.**

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

**Answer:**

The following matrices can be added to our dashboard:

**Measures of operations:**

* *Total Tickets*: The total number of tickets generated on a daily, monthly, or quarterly basis.
* *Ticket Volume by Category*: Ticket volume broken down by severity, priority, and issue kind or request category (e.g., hardware failures, software difficulties).   
  The average resolution time (ART) is the amount of time needed to close a ticket. aids in efficiency measurement.
* *Tickets by type of severity and priority*

**Metrics for the Customer Experience:**

* The average satisfaction rating derived from post-ticket surveys is known as the *customer satisfaction (CSAT) score*.
* *Average Time to Resolution*: The typical amount of time, broken down by issue category, needed to resolve tickets.

**Metrics for Employee Performance:**

* *Average Number of Tickets Per Agent*: a productivity metric that displays how many tickets each agent handles.
* *Agent Efficiency*: A composite measure that takes handle and resolution times into account**.**

**Trend Analysis:**

* *Ticket Volume & Performance Trends*: Trends in average resolution time, satisfaction ratings, and ticket volume on a monthly or quarterly basis.
* *Agent Performance Trends*: Monitor shifts in the efficiency and productivity of agents over time.
* *Trends in Satisfaction*: How satisfaction levels vary over time, particularly following the implementation of adjustments or enhancements.

**Dashboard Visualization Suggestions:**

Trend Line Charts: For ticket volume, resolution times, and customer satisfaction trends.

Bar Charts: To visualize agent performance, ticket categories, and customer satisfaction scores.

