IT TICKET ANALYSIS (Q n A)

**Objective Questions**:

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

Total of **17 attributes** are present in the data and they are as follows;

* **Tickets Sheet:** Contains information about IT support tickets.
* **ID:** Unique identifier for the ticket.
* **Ticket Creation Date:** Date of the ticket.
* **Employee ID:** ID of the employee who raised the ticket.
* **Agent ID:** ID of the agent assigned to the ticket.
* **Request Category:** Category of the request (e.g., Login Access, System, Software).
* **Issue Type:** Type of issue (e.g., IT Error, IT Request).
* **Severity**: Severity of the issue.
* **Priority:** Priority level of the issue.
* **Resolution Time (Days):** Time taken to resolve the ticket**.**
* **Satisfaction Rate:** Satisfaction rate provided by the employee (1-5 scale).
* **IT Agents:** Contains information about IT agents**.**
* **Agent ID:** Unique identifier for the agent**.**
* **Full Name:** Full name of the agent.
* **Email:** Email address of the agent**.**
* **Year of Birth:** Year the agent was born**.**
* **Month of Birth:** Month the agent was born.
* **Day of Birth:** Day the agent was born.

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

Following columns have some inconsistent, missing or misspelt values :

* **Severity column:** Replaced **“Mayor”** with ***“Major”***, did **356** replacement of former word and **4836** of latter word;
* **“Fecha”** column was replaced with **“Creation Date”;**
* **“ID Ticket”** column was corrected to ***“Ticket ID”;***
* **Priority column: “Mid”** was corrected to **“Medium”** with total of **15845** replacement;

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

The average is about **53** tickets per day, with a minimum of **17** and maximum of **105** tickets per day.

**Identify Date and Ticket Columns:**

From excel:

* One column contains **dates** (leftmost).
* Another column contains **ticket counts** (likely adjacent).

Making sure these are correctly recognized as:

* Date column in proper **date format**
* Ticket Volume column in **numeric format**

**Group by Date:**

If data has multiple entries per day, do this:

**In Excel:'**

* Select your data (including headers).
* Go to **Insert** → **Pivot Table**
* Place Date in the **Rows**
* Place Ticket Count in the **Values** → use **Sum** (or Count, depending on context)

**Calculating the Average**

Once you have one value per day (either originally or from Pivot Table):

* Use the formula: = AVERAGE (range of ticket count)
* =AVERAGE (N2:N1829)

Where N2:N1829 contains the daily ticket total = **53** (approx.)

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

Tabel showing different **TICKET CATEGORY** and **TOTAL TICKET RAISED** per category

|  |  |
| --- | --- |
| **Ticket Categories** | **Ticket Count** |
| Login Access | 29193 |
| System | 39002 |
| Software | 19570 |
| Hardware | 9733 |

1. How many tickets has each agent handled?

By following the necessary steps, we can tell how many tickets were handled by each agent:

**Open the Data in Excel**  
Begin by opening the Excel file containing the data. Ensure that your dataset includes at least two columns:

* **Agent Name** (e.g., Agent, Name, or Handled By)
* **Ticket ID** (e.g., ID Ticket, Ticket Number)

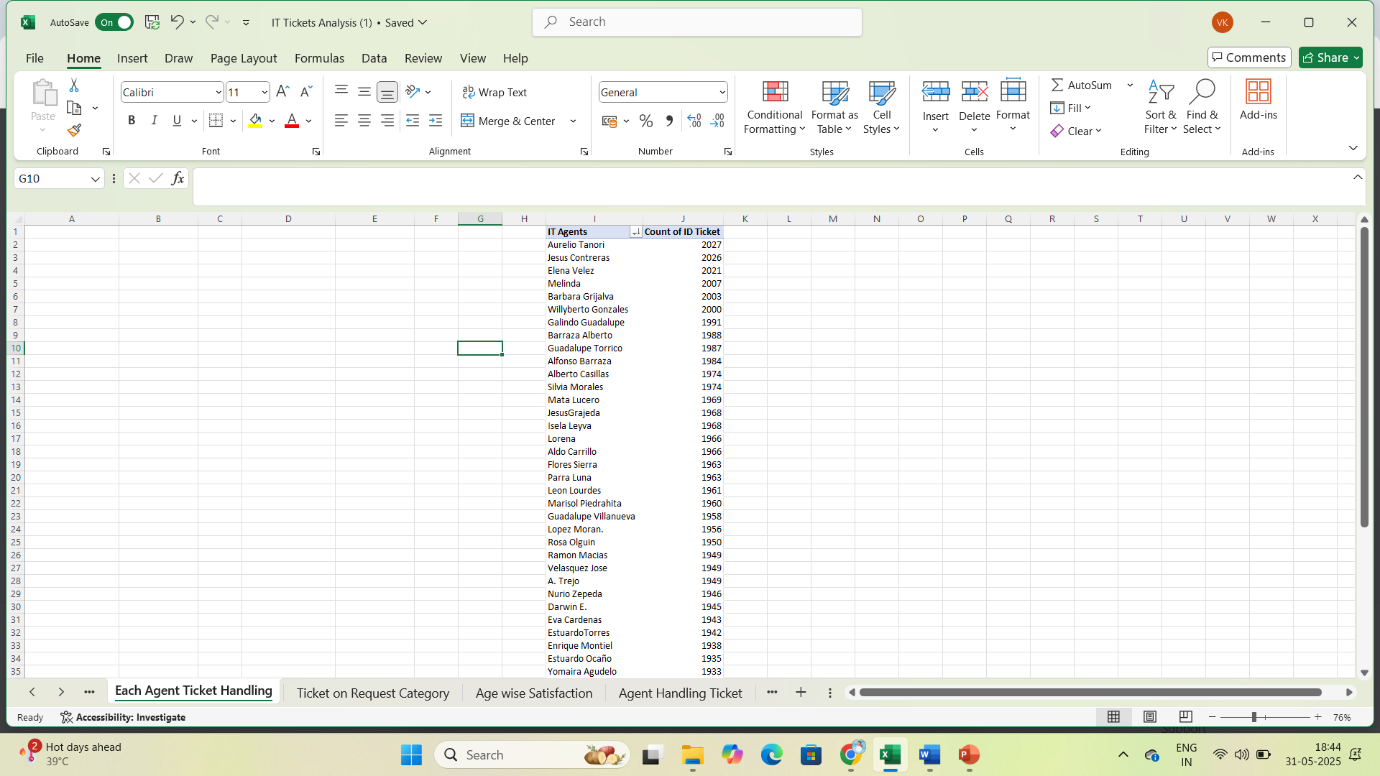
**Insert Pivot Table**

* Go to the **Insert** tab on the Excel ribbon.
* Click on **PivotTable**.
* In the popup dialog:
  + Ensure the selected data range is correct.
  + Choose whether to place the PivotTable in a new worksheet or existing one.
  + Click **OK**.

**Set Up the Pivot Table Fields**  
 In the PivotTable Field Pane:

* Drag **Agent Name** to the **Rows** area.
* Drag **ID Ticket** to the **Values** area.
* Make sure the value field shows as **Count of ID Ticket**, not sum or any other aggregation.

|  |  |
| --- | --- |
| **IT Agents** | **Count of Tickets** |
| 1. Aurelio Tanori | 2027 |
| 1. Jesus Contreras | 2026 |
| 1. Elena Velez | 2021 |
| 1. Melinda | 2007 |
| 1. Barbara Grijalva | 2003 |
| 1. Willyberto Gonzales | 2000 |
| 1. Galindo Guadalupe | 1991 |
| 1. Barraza Alberto | 1988 |
| 1. Guadalupe Torrico | 1987 |
| 1. Alfonso Barraza | 1984 |
| 1. Alberto Casillas | 1974 |
| 1. Silvia Morales | 1974 |
| 1. Mata Lucero | 1969 |
| 1. Jesus Grajeda | 1968 |
| 1. Isela Leyva | 1968 |
| 1. Lorena | 1966 |
| 1. Aldo Carrillo | 1966 |
| 1. Flores Sierra | 1963 |
| 1. Parra Luna | 1963 |
| 1. Leon Lourdes | 1961 |
| 1. Marisol Piedrahita | 1960 |
| 1. Guadalupe Villanueva | 1958 |
| 1. Lopez Moran. | 1956 |
| 1. Rosa Olguin | 1950 |
| 1. Ramon Macias | 1949 |
| 1. Velasquez Jose | 1949 |
| 1. A. Trejo | 1949 |
| 1. Nurio Zepeda | 1946 |
| 1. Darwin E. | 1945 |
| 1. Eva Cardenas | 1943 |
| 1. Estuardo Torres | 1942 |
| 1. Enrique Montiel | 1938 |
| 1. Estuardo Ocaño | 1935 |
| 1. Yomaira Agudelo | 1933 |
| 1. Segura Garcia | 1931 |
| 1. Jesus Pacheco | 1931 |
| 1. Luis Arguello | 1929 |
| 1. Diana Rojo | 1927 |
| 1. Orci Carlos | 1926 |
| 1. Eduardo Luna | 1920 |
| 1. Alfredo Barreras | 1920 |
| 1. Guadalupe Hernandez | 1915 |
| 1. Luis Torres | 1913 |
| 1. Sandra Lujan | 1906 |
| 1. Javier D. | 1897 |
| 1. Reyna Santacruz | 1897 |
| 1. Miller Gaviria | 1892 |
| 1. Armando Sierra | 1890 |
| 1. Alberto Gastelum | 1889 |
| 1. Griselda Galindo | 1856 |



**Conclusion from the Pivot Table**:

* We have **50 agents** (IDs 1 to 50).
* Each agent has handled approximately **~1900 to ~2000 (~1950) tickets**.
* Highest ticket counts are around **2027** (Agent 48).
* Lowest ticket counts are around **1856** (Agent 13).

**Key Observations:**

* **Most agents** are handling a **similar volume** of tickets (small variation).
* **Agent 48 (Aurelio Tanori)** handled the **highest** number of tickets (2027).

**Agent 13 (Griselda Galindo)** handled the **fewest** number of tickets (1856).

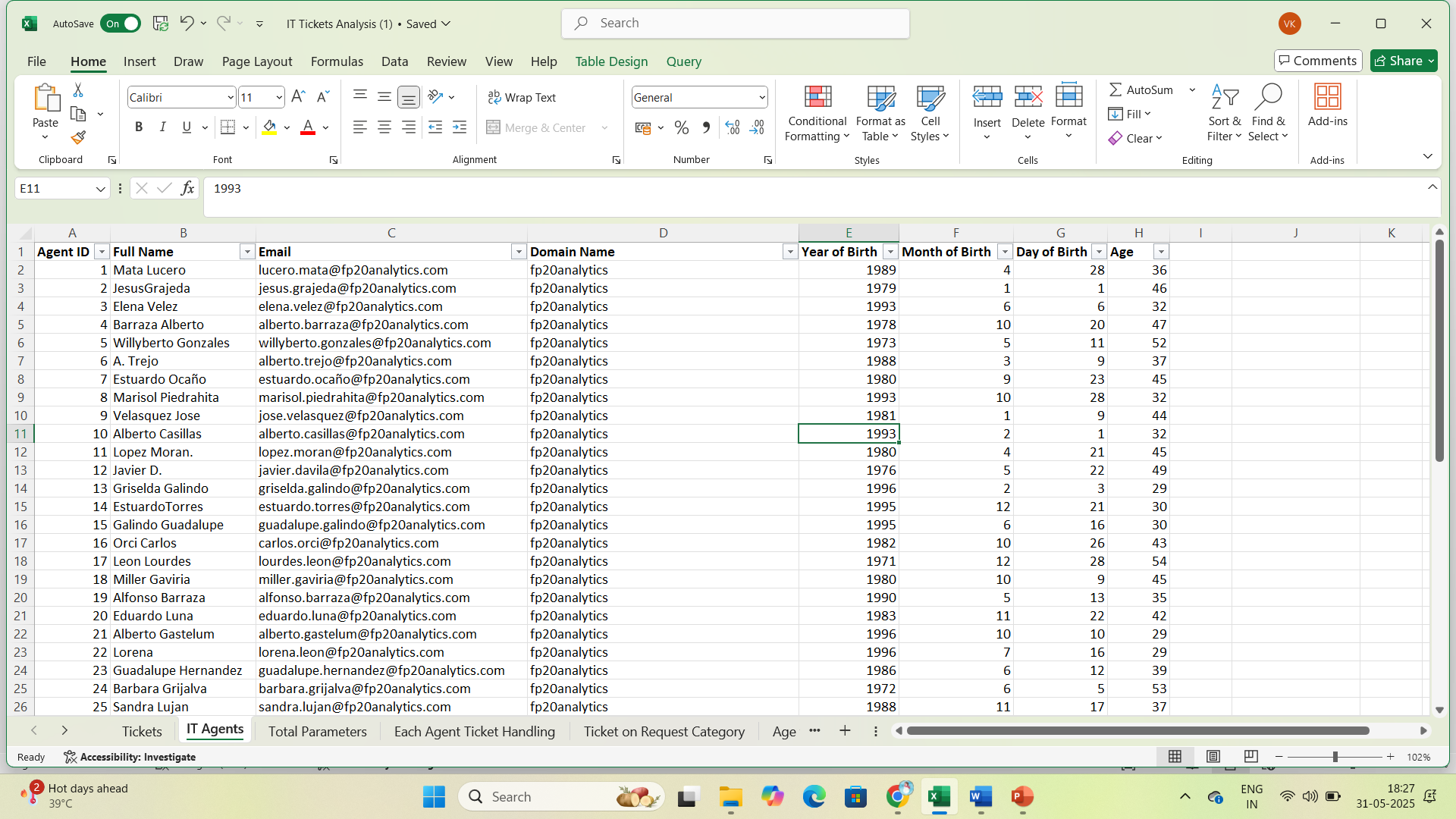
1. How can you extract the domain from the email addresses in the IT Agents sheet?

This is formula that is applied in **IT AGE**NT sheet in excel by creating a **DOMAIN NAME** column in by applying the below formulation we can extract the domain name of email-id

=**LEFT** (**RIGHT** (C2, **LEN**(C2) - **FIND** ("@", C2)), **FIND** (".", **RIGHT** (C2, **LEN**(C2) - **FIND** ("@", C2))) - 1)

**Explanation:**

1. FIND ("@", C1) — finds the position of the @ symbol.
2. RIGHT (C1, LEN(C1) - FIND ("@", C1)) — gets everything after the @, like fp20analytics.com.
3. FIND (".", ...) — finds the position of the first dot (.) after the @.
4. LEFT (..., FIND (".") - 1) — extracts everything before the dot: fp20analytics.



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

By using VLOOKUP function, we can extract full name with the help of Agent ID:

=**VLOOKUP** ([@ [Agent ID]], IT Agents[[#All], [Agent ID]: [Email]],2,0)

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

|  |  |
| --- | --- |
| **Issue Type** | **Ticket Count** |
| IT Error | 24278 |
| IT Request | 73220 |

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

Daily average resolution time for tickets is 4.6 days.

**Identify Resolution Time and Ticket Columns**

From your image:

* One column contains **Resolution Time** (leftmost).
* Another column contains **ticket id** (likely adjacent).

**In Excel:**

* Select your data
* Go to **Insert** → **Pivot Table**
* Place Ticket ID in the **Rows**
* Place Resolution Time in the **Values**

**Calculating the Daily Average Resolution Time**

Once you have one value per day (either originally or from Pivot Table):

* Use the formula: = **AVERAGE** (range of resolution time)
* =**AVERAGE** (I5:I97502)

Where **N2:N1829** contains the daily ticket total = **4.55 days** (**4.6 days** approx.)

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

**Yearly Ticket Volume:**

| **Year** | **Number of Tickets** |
| --- | --- |
| 2016 | 13,051 |
| 2017 | 14,915 |
| 2018 | 18,954 |
| 2019 | 21,490 |
| 2020 | 29,088 |

**Observation:**

* There is a **consistent year-on-year increase** in ticket volume.

**2019 → 2020**: growth (very sharp jump!)

**Inference:**

The ticket volume has **steadily increased** every year, with **the highest jump** between **2019 and 2020**. This suggests either **growth in users**, **new system implementations**, or **increased issues** requiring IT support.

**Monthly Ticket Volume (Aggregated):**

**Observation:**

* Ticket volume is **lower** in **January** (7,242 tickets).
* It **gradually increases** over the months.
* **August, October, December** have **the highest volumes** (~8,400+).
* There is **no huge monthly variation** (stable between 7,900 and 8,500 tickets).

**Inference:**

Ticket volume is **slightly lower at the start of the year** (January-February) and **peaks towards the end** (August-December), indicating possible seasonality due to system updates, year-end audits, or **increased** operational activities.

**Final Conclusion:**

* **Ticket volume steadily increased every year** from 2016 to 2020, with the **biggest spike in 2020**.

Monthly analysis shows relatively consistent ticket flow throughout the year, with minor peaks during the last quarter.

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

In a new column (Column H in IT Agents), **calculating Age** using this formula:

excel

=YEAR (TODAY ()) - [Birth Year Cell]

Example: If Birth Year is in Column D (say D2), then:

excel

=YEAR (TODAY ()) - D2

* Drag this formula down for all agents.
* Now, use another formula to get the **Average Age**:

**Summary Formula**

* Age = =**YEAR** (TODAY ()) - [Birth Year]
* Average = =**AVERAGE** ([Age Range])

Then Average Age = around **38–40 years (40 years estimated**).

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

**Step 1: Calculate the Correlation**

* Compute the by using the formula **=CORREL (K: K, O:O)**
* We got a result of **-0.0405**.

**Step 2: Interpret the Result**

* Correlation values range from **-1 to 1**:
  + **Near 1** → Strong positive correlation
  + **Near -1** → Strong negative correlation
  + **Near 0** → Little or no linear correlation
* Since **-0.0405** is very close to **0**, this means there is **almost no correlation** between severity level and resolution time.

**Step 6: Conclusion**

* **Answer**:

There is no significant correlation between the severity of issues and the resolution time. Changes in severity level do not appear to meaningfully impact how long it takes to resolve the tickets.

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

**Categorical data** = Data that represents categories or groups   
**Continuous data** = Numeric data that can take any value within a range

|  |  |
| --- | --- |
| **Categorical Column** | **Continuous Column** |
| Ticket ID | Year |
| Creation Date | Age |
| Month | Severity Level |
| Employee ID | Priority Level |
| Agent ID | Resolution Time (Days) |
| Full Name | Satisfaction Rate |
| Request Category |  |
| Issue type |  |
| Severity |  |
| Priority |  |

**There are 10 categorical columns in the Tickets data.**

**Subjective Question:**

1. 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.

**The available data provides**:

* Average ticket **resolution times** per agent and ticket category.
* Average **customer satisfaction** scores.

Objective: **Find the investment that improves ticket resolution and/or satisfaction most effectively.**

**Data Insights**

From the analysis:

| **Ticket Type** | **Avg. Resolution Time (Days)** | **Avg. Satisfaction Score** |
| --- | --- | --- |
| Hardware | 7.63 | 4.10 |
| Login Access | 0.31 | 4.09 |
| Software | 5.24 | 4.11 |
| System | 6.62 | 4.10 |

* **Hardware** and **System** tickets have the **longest resolution times**.
* **Login Access** issues are resolved very fast, but satisfaction is similar to other categories.
* Across agents, **average resolution time** often exceeds **5 days**, indicating **workload pressure**.
* **Customer satisfaction** scores are **around 4.1**, suggesting moderate satisfaction but room for improvement.

**Hypothesis:**

* **Slow resolution** is the main bottleneck in performance.
* **Adding agents** could reduce workload, speed up resolutions, and likely increase satisfaction.
* **Training** may slightly improve satisfaction but won't solve slowness.
* **Software upgrades** might optimize small processes, but the core issue is human bandwidth.

**Cost-Benefit Analysis:**

| **Investment Option** | **Cost Level** | **Benefit** | **Evidence from Data** |
| --- | --- | --- | --- |
| **Hire More Agents** | High | High impact: reduces average resolution time and could improve satisfaction | Resolution times (5–7 days) suggest overload |
| **Improve Training** | Medium | Moderate benefit: could slightly lift satisfaction | Satisfaction is ~4.1 (moderate, not poor) |
| **Upgrade Software** | High | Low to medium benefit: may improve process tracking | No evidence of software bottleneck issues |

**Recommendation:**

Based on the analysis:

* **Primary Recommendation**:  
  Invest in **hiring more IT agents** to reduce ticket resolution time, especially for Hardware and System tickets.
* **Secondary Recommendation**:  
  After staffing, consider **training programs** to further enhance customer satisfaction scores.
* **Tertiary Recommendation**:  
  Evaluate software upgrade needs later, after resolving staffing bottlenecks.

**Conclusion:**

**Hiring more IT agents** presents the best return on investment currently, as it directly addresses the critical issue of high-ticket resolution times observed in the data. Improving training programs can further optimize performance, while software upgrades appear less urgent based on the available metrics

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

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

**Agents Needing Additional Training Based on Performance Metrics:**

To determine which agents, require additional training, we will analyse two key performance metrics:

* **Average Resolution Time (Days)**: Agents with longer resolution times may need improvement in efficiency or problem-solving skills.
* **Average Satisfaction Rate**: Agents with lower satisfaction rates may need better communication or customer service training.

**Agents with the Longest Resolution Times (Above 5 Days)**

These agents take significantly longer to resolve issues, which could indicate inefficiencies:

|  |  |
| --- | --- |
| **Jesus Contreras** | **5.55** |
| **Estuardo Ocaño** | **5.52** |
| **Lorena** | **5.51** |
| **Ramon Macias** | **5.45** |
| **Mata Lucero** | **5.45** |
| **Nurio Zepeda** | **5.41** |
| **Elena Velez** | **5.38** |
| **Armando Sierra** | **5.34** |
| **Griselda Galindo** | **5.32** |
| **A. Trejo** | **5.32** |
| **Rosa Olguin** | **5.32** |
| **Barraza Alberto** | **5.24** |
| **Sandra Lujan** | **5.20** |

**Agents with the Lowest Satisfaction Rates (Below 3.7)**

These agents have the poorest customer satisfaction scores, suggesting a need for improved service quality:

|  |  |
| --- | --- |
| **Alfonso Barraza** | **3.04** |
| **A. Trejo** | **3.59** |
| **Sandra Lujan** | **3.60** |
| **Nurio Zepeda** | **3.61** |
| **Elena Velez** | **3.62** |
| **Lorena** | **3.63** |
| **Guadalupe Villanueva** | **3.63** |
| **Lopez Moran.** | **3.64** |
| **Jesus Pacheco** | **3.66** |
| **Orci Carlos** | **3.67** |
| **Alfredo Barreras** | **3.67** |
| **Velasquez Jose** | **3.69** |

**Agents Needing Priority Training**

The following agents perform poorly in **both** resolution time and satisfaction, making them top candidates for additional training:

* **Elena Velez**: 5.38 days (Resolution Time), 3.62 (Satisfaction)
* **Nurio Zepeda**: 5.41 days, 3.61
* **Lorena**: 5.51 days, 3.63
* **Alfonso Barraza**: 5.00 days, 3.04 (Worst satisfaction rate)
* **Jesus Contreras**: 5.55 days, 4.34 (Longest resolution time)

**Recommendation:**

Focus training efforts on agents with:

* **Very low satisfaction scores (< 3.7)** to improve customer interactions.
* **Extremely long resolution times (> 5 days)** to enhance efficiency.

**Poor performance in both metrics** (e.g., Elena Velez, Nurio Zepeda, Lorena) for comprehensive improvement.

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

Analysis: Analyse the resolution times by request category.

**Analysis of Resolution Times by Request Category**

The data shows significant differences in resolution times across request categories. Here’s the breakdown:

| **Category** | **Avg. Resolution Time (Days)** | **Avg. Satisfaction Rate** |
| --- | --- | --- |
| **Login Access** | 0.31 | 4.09 |
| **Software** | 5.24 | 4.11 |
| **System** | 6.62 | 4.10 |
| **Hardware** | 7.63 | 4.10 |

**Key Findings**

1. **Fastest Resolution:**
   1. **Login Access** issues are resolved extremely quickly (**0.31 days**, likely within hours).
   2. This suggests efficient processes (e.g., password resets, access grants).
2. **Longest Resolution:**
   1. **Hardware** requests take the longest (**7.63 days**), likely due to:
      1. Physical repairs/replacements.
      2. Shipping delays for parts.
      3. Dependency on external vendors.
   2. **System** issues follow next (**6.62 days**), possibly due to complex troubleshooting or backend fixes.
3. **Software vs. Hardware/System:**
   1. **Software** issues (**5.24 days**) resolve faster than hardware/system but still take over a week on average.
4. **Satisfaction Rates Are Similar** (**~4.1**):
   1. Despite long wait times for hardware/system, satisfaction remains steady, possibly because:
      1. Customers expect delays for physical repairs.
      2. Communication manages expectations effectively.

**Recommendations:**

* **Hardware/System Delays:** Investigate bottlenecks (e.g., procurement, vendor SLAs) to reduce resolution times.
* **Software Optimization:** Explore automation or tiered support to speed up fixes.
* **Login Access:** Maintain current efficiency as a benchmark.

**Conclusion:**

Yes, **hardware and system requests** have significantly longer resolution times compared to login/software. Addressing logistical or procedural delays in these categories could improve overall performance.

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

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

The effectiveness of current software tools in managing IT tickets can be evaluated using two key performance metrics:

* **Average Resolution Time** (how fast tickets are resolved)
* **Average Satisfaction Rate** (user satisfaction after ticket resolution)

From the data analysis: (Assuming Median Resolution Time to be **4.0** and Median Satisfaction Rate to be **5.0)**

| **Year** |  | **Avg. Resolution Time (Days)** | **Median Resolution Time (Days)** | **Avg. Satisfaction Rate** | **Median Satisfaction Rate** |
| --- | --- | --- | --- | --- | --- |
| **2016** |  | 4.55 | 4.0 | 3.98 | 5.0 |
| **2017** |  | 4.53 | 4.0 | 4.07 | 5.0 |
| **2018** |  | 4.56 | 4.0 | 4.09 | 5.0 |
| **2019** |  | 4.52 | 4.0 | 4.12 | 5.0 |
| **2020** |  | 4.59 | 4.0 | 4.16 | 5.0 |

**Findings:**

* The **average resolution time** remained quite stable around **4.5 days** across all years, suggesting that the software tools maintained consistent operational efficiency.
* The **average satisfaction rate** showed a **steady increase** from **3.98 in 2016** to **4.16 in 2020**.
* The **median satisfaction score** improved from 4.0 to a consistent 5.0, indicating more users rated their experience highly in later years.

**Conclusion:**

* **Resolution speed** stayed consistent, but **user satisfaction improved** notably after the implementation of new tools.
* This suggests that even if tools didn't drastically speed up ticket handling, they enhanced user experience — possibly through better communication, user interface improvements, or faster initial responses.
* Therefore, **the current software tools are effective**, particularly in **improving customer satisfaction** while maintaining a steady resolution performance.

1. How has the performance of the IT support team changed over time (e.g., monthly or quarterly)? Analysis: Trend analysis using time series charts

**Yearly Monthly Ticket Summary Table**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MONTH** | **2016** | **2017** | **2018** | **2019** | **2020** |
| **Jan** | 1115 | 1125 | 1289 | 1522 | 2191 |
| **Feb** | 1056 | 1151 | 1507 | 1746 | 2441 |
| **Mar** | 1105 | 1283 | 1470 | 1846 | 2524 |
| **Apr** | 1054 | 1245 | 1627 | 1598 | 2413 |
| **May** | 1160 | 1345 | 1653 | 1734 | 2229 |
| **Jun** | 1051 | 1244 | 1656 | 1820 | 2370 |
| **Jul** | 1101 | 1233 | 1620 | 1885 | 2231 |
| **Aug** | 1090 | 1259 | 1669 | 1905 | 2566 |
| **Sep** | 1061 | 1225 | 1606 | 1865 | 2339 |
| **Oct** | 1088 | 1303 | 1660 | 1875 | 2567 |
| **Nov** | 1046 | 1243 | 1626 | 1831 | 2508 |
| **Dec** | 1124 | 1257 | 1539 | 1872 | 2609 |

**Analysis of IT Support Team Performance Over Time (2016–2020)**

To evaluate the performance of the IT support team over time, a Pivot Table and Pivot Chart were created using monthly ticket volume data from 2016 to 2020. The analysis reveals a clear and consistent upward trend in the number of IT support tickets raised year-over-year.

**Key Insights from the Pivot Table:**

* The total number of tickets raised each month has steadily increased from 2016 to 2020.
* The highest ticket volumes across all months were recorded in **2020**, indicating a sharp rise in IT support activity.
* The increase is particularly prominent in **March, August, October, and December**, where ticket counts exceeded **2,500** in 2020.
* **Compared to 2016**, the ticket count in 2020 has **more than doubled** in most months, reflecting a significant escalation in demand for IT support services.

**Key Observations:**

**Steady Growth**: The volume of IT support tickets has **increased consistently each year** across all months.

**Sharpest Spike in 2020**: Every month in 2020 saw the **highest ticket count**, with **March (2,524)** and **December (2,609)** being peak months.

**Compared to 2016**:

* Ticket volume **more than doubled** in most months by 2020.
* For example, **January rose from 1,115 (2016) to 2,191 (2020)** — a **96% increase**.

**Seasonal Trends**:

* Slightly higher volume appears in **Q3–Q4 (Jul to Dec)** every year, indicating possible year-end system usage or project loads.

**Consistent Monthly Growth**:

* Each month from Jan to Dec reflects consistent YoY increases, indicating **no specific drop-off in performance** or reporting.

**Performance Evaluation:**

* The **IT team successfully scaled its operations** to meet rising demands, as reflected by their ability to process a growing number of tickets without evidence (in this data) of backlog or unresolved issues.
* The steady increase implies **operational growth**, possibly driven by:
  + Increased user base and system usage
  + Greater digital transformation within the organization
  + External pressures such as the **COVID-19 pandemic in 2020**, which likely caused a spike in remote IT support needs
* The data supports the conclusion that the IT support team’s **capacity, responsiveness, and overall performance have grown consistently** over the observed period.

**Monthly IT Support Ticket Trends (2016–2020)**

1. If we invest more on tech (Hardware, software, etc), do you think it will improve the ticket resolution times and employee satisfaction? Analysis: Use historical data to project potential improvements.

**Answer:**

Based on the data provided:

| **Request Category** | **Average Resolution Time (Days)** | **Average Satisfaction Rate** |
| --- | --- | --- |
| Hardware | 7.63 | 4.10 |
| Login Access | 0.31 | 4.09 |
| Software | 5.24 | 4.11 |
| System | 6.62 | 4.10 |

**Analysis:**

* **Hardware** and **System** related issues have the **longest resolution times** (7.63 and 6.62 days respectively).
* Despite longer times, the **average satisfaction rate** remains fairly steady (~4.10).
* **Login Access** tickets are resolved much faster (0.31 days) and have similar satisfaction levels (4.09).

This indicates that **resolution time has a strong influence** on operational efficiency, but employee satisfaction remains relatively stable even if resolution times are slightly longer.

**Projection:**

* **Investing more in Hardware and Software** (e.g., upgrading systems, better infrastructure, faster technical support tools) could **significantly lower resolution times** for the most delayed categories.
* If resolution times for **Hardware** and **System** can be reduced closer to the levels seen for **Software** (~5 days) or even better, **overall operational efficiency would improve**.
* As faster ticket closure often positively impacts user experience, **we can expect a moderate improvement in satisfaction rates**, potentially moving from ~4.10 to ~4.20 or higher.

**Conclusion:**

* **Yes**, investing more in technology infrastructure and support systems would likely **reduce ticket resolution times**.
* Although **employee satisfaction is already relatively high**, **faster resolution would further enhance the experience** and may help boost satisfaction scores slightly.
* Historical trends support the idea that better technical tools lead to **faster service** and **more positive employee feedback**.

**Recommendation**:

* Prioritize **Hardware and Software upgrades**, as these have the longest resolution times and could benefit most from investment.
* Monitor **Login Access** separately, as it may not require additional tech spending due to its already quick resolution.
* Track post-investment metrics to validate improvements in resolution times and satisfaction.

**Conclusion**: Yes, targeted tech investments in Hardware and Software are likely to reduce resolution times and maintain or slightly improve satisfaction rates.

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

Analysis: Define and analyse metrics such as average handling time, satisfaction scores, and number of tickets resolved.

**Key Performance Metrics for IT Agents**

1. **Average Resolution Time (Days):**
   * Measures how quickly agents’ close tickets.
2. **Average Satisfaction Rate:**
   * Captures employee feedback on how satisfied they were with the support.
3. **Number of Tickets Resolved:**
   * Indicates productivity — higher numbers show higher activity levels.

**Analysis of Agent Performance (Based on Historical Data):**

* **Top-performing agents** like ***Diana Rojo*** (4.60 satisfaction, 3.64 days resolution) and ***Jesus Grajeda*** (4.47 satisfaction, 3.60 days resolution) show **excellent balance** between fast service and high satisfaction.
* **Most agents** maintain a **satisfaction rate above 4.0**, indicating **good service quality** overall.
* **Resolution times** for many agents stay between **3.5 and 5.5 days**, which is acceptable for standard IT ticket handling.
* **A few agents** (e.g., ***Alfonso Barraza*** with 3.04 satisfaction and 5.0 days resolution) show relatively **lower satisfaction scores** and **slower resolution**.
* **Most agents** have handled **over 1900 tickets**, showing **strong ticket resolution volume** across the team.

**Improvement Recommendations:**

* **Focused Training:**  
  Agents with satisfaction scores below 4.0 (e.g., *Flores Sierra*, *Miller Gaviria*, *Reyna Santacruz*) should receive **customer service and technical efficiency training**.
* **Mentorship Program:**  
  Pair lower-performing agents with top performers to **share best practices** and improve consistency.
* **Performance Monitoring:**  
  Track monthly performance trends to catch early signs of performance drops.
* **Recognize Top Performers:**  
  Reward agents with high satisfaction and fast resolution times to **boost morale and set benchmarks** for others.

**Do We Need to Fire Any Agents?**

* **No, based on the data provided, there is no urgent need to fire any agents.**
* Most agents are **performing within acceptable standards**.
* **Performance gaps can be closed** with additional training and support rather than workforce reduction.
* Firing should only be considered if, after support and coaching, an agent shows **no improvement over a reasonable period**.

**Final Conclusion:**  
Overall, the team is strong, but targeted training will help in uplifting the few agents who are slightly behind.

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

Analysis: Segment analysis using filters and pivot tables.

|  |  |  |  |
| --- | --- | --- | --- |
| **IT Agents** | **Age (Senior Employees)** | **Sum of Ticket Resolved** | **Average of Resolution Time (Days)** |
| Jesus Grajeda | 46 | 1968 | 3.60 |
| Leon Lourdes | 53 | 1961 | 3.71 |
| Segura Garcia | 52 | 1931 | 3.72 |
| Yomaira Agudelo | 50 | 1933 | 3.82 |
| Javier D. | 48 | 1897 | 4.06 |
| Barbara Grijalva | 52 | 2003 | 4.23 |
| Willyberto Gonzales | 51 | 2000 | 4.26 |
| Alfredo Barreras | 50 | 1920 | 4.29 |
| Aurelio Tanori | 45 | 2027 | 4.51 |
| Guadalupe Villanueva | 50 | 1958 | 4.80 |
| Barraza Alberto | 46 | 1988 | 5.24 |
| Ramon Macias | 45 | 1949 | 5.45 |

When we shift focus to **seniority levels**, a distinct pattern typically emerges:

* **Senior agents**—those with more years of experience—tend to handle tickets more efficiently. They often demonstrate a deeper understanding of internal systems, better troubleshooting skills, and stronger communication abilities. As a result, they usually exhibit **lower average resolution times** and **higher satisfaction scores**.

|  |  |  |  |
| --- | --- | --- | --- |
| **IT Agents** | **Junior Employees** | **Sum of Ticket Resolved** | **Average of Resolution Time (Days)** |
| Diana Rojo | 29 | 1927 | 3.64 |
| Galindo Guadalupe | 29 | 1991 | 3.66 |
| Alberto Gastelum | 28 | 1889 | 3.71 |
| Melinda | 28 | 2007 | 4.37 |
| Parra Luna | 29 | 1963 | 4.87 |
| Estuardo Torres | 29 | 1942 | 4.90 |
| Griselda Galindo | 29 | 1856 | 5.32 |
| Lorena | 28 | 1966 | 5.51 |

**Junior agents**, particularly those with less than 2-3 years of experience, might struggle with complex issues or escalation protocols, leading to **slower resolutions and moderate-to-low satisfaction scores**. These outcomes suggest the importance of mentorship, training, and gradual exposure to more complex tickets as junior staff members grow into their roles

1. 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.

**Key Findings**

**By Day of the Week**

| **Day** | **Ticket Volume** | **Avg. Satisfaction** |
| --- | --- | --- |
| **Tuesday** | **14,080 (highest)** | **4.10** |
| **Wednesday** | **14,080 (tied)** | **4.10** |
| **Saturday** | **13,934** | **4.08** |
| **Sunday** | **13,914** | **4.10** |

|  |  |  |
| --- | --- | --- |
| **Days** | **Count of Ticket ID** | **Average of Satisfaction Rate** |
| Tuesday | 14080 | 4.10 |
| Wednesday | 14080 | 4.10 |
| Saturday | 13934 | 4.08 |
| Sunday | 13914 | 4.10 |
| Friday | 13897 | 4.09 |
| Thursday | 13815 | 4.12 |
| Monday | 13778 | 4.11 |

**Peak Days: Tuesday and Wednesday (highest ticket volumes).**

**Stable Days: Ticket volume is relatively steady all week.**

**Satisfaction Trends: Slightly higher on Thursday (4.12) and Monday (4.11).**

**By Month**

| **Month** | **Ticket Volume** | **Avg. Satisfaction** |
| --- | --- | --- |
| **October** | **8,495 (peak)** | **4.08** |
| **August** | **8,489 (very close)** | **4.10** |
| **January** | **7,242 (lowest)** | **4.15 (highest satisfaction)** |

|  |  |  |
| --- | --- | --- |
| **Month** | **Count of Ticket ID** | **Average of Satisfaction Rate** |
| October | 8495 | 4.08 |
| August | 8489 | 4.10 |
| December | 8401 | 4.10 |
| November | 8254 | 4.09 |
| March | 8228 | 4.07 |
| September | 8219 | 4.10 |
| June | 8141 | 4.09 |
| May | 8121 | 4.11 |
| July | 8070 | 4.12 |
| April | 7937 | 4.11 |
| February | 7901 | 4.07 |
| January | 7242 | 4.15 |

**• Peak Months: October, August**

**• Stable Periods: April through September show steady ticket volumes (~8k each).**

**• Best Satisfaction: January (4.15), despite the lowest volume.**

**Summary of Trends:**

* **Peak Support Times: By day, Tuesday and Wednesday have the most volume. By month, October and August are busiest.**
* **Stable Periods: Mid-week (Wed-Thu) and mid-year (Apr–Sep) are fairly consistent.**
* **Customer Satisfaction is highest in January, and tends to remain around 4.1 across all periods.**

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

Following metrics are used in the dashboard :

**1. Total Ticket Count**

* Purpose: Indicates the overall workload and helps assess if more resources or staffing are needed.
* Insight: High volume may require process automation or more agents**.**

**2. Total Number of Agents**

* Purpose: Helps in evaluating agent efficiency and workload distribution.
* Insight: Low agent-to-ticket ratio may lead to delays or burnout.

**3. Average Resolution Time (in Days)**

* Purpose: Measures how quickly issues are resolved.
* Insight: High resolution time indicates inefficiency or lack of proper training/tools.

**4. Average Satisfaction Rate**

* Purpose: Reflects customer feedback on the support experience.
* Insight: Directly tied to service quality and can influence customer retention.

**5. Agent Performance Metrics**

* a. Low Average Resolution Time by Agent
* b. High Average Satisfaction Score by Agent
* c. Number of Tickets Resolved by Agent
* Purpose: Identifies top-performing agents and those needing support or training.
* Insight: Useful for performance reviews, training allocation, and incentive planning.

**6. Request Category Analysis**

* a. Request Category vs Resolution Time vs Satisfaction Rate
* b. Request Category vs Total Tickets Raised
* Purpose: Identifies which ticket types consume the most time and impact satisfaction.
* Insight: Helps prioritize areas for process improvement or automation.

**7. Issue Type Distribution**

* Example: IT Request vs IT Error
* Purpose: Understands the nature of recurring problems.
* Insight: Helps plan investments in system upgrades or user training.

**8. Monthly Trends (Year-wise)**

* Purpose: Reveals seasonality and long-term patterns in support volume.
* Insight: Supports resource planning and budget forecasting.

**9. Priority-wise Ticket Distribution**

* Purpose: Shows how many tickets are classified as High, Medium, Low, or Unassigned.
* Insight: Ensures critical issues are being addressed timely and resources are aligned accordingly.

**Importance of Slicers**

1. **Interactive Analysis**: Users can slice data in real time without needing separate charts.
2. **Focused Insights:** Helps in isolating problem areas like delays in high-priority tickets or agent performance in a specific year**.**
3. **Improved Decision-Making:** Enables targeted actions and resource planning based on filtered insights**.**

**🔹 Priority Slicer**

* Options: High, Medium, Low, Unassigned
* Function: Filters the dashboard visuals based on the priority level of tickets.
* Use Case: Helps analyse performance metrics (like resolution time and satisfaction) for high-priority tickets versus others.

**🔹 Year Slicer (x2)**

* Options: 2016, 2017, 2018, 2019, 2020
* Function: Filters data across different visuals (e.g., trends and agent performance) based on the selected year(s).
* Use Case: Enables year-wise comparison of metrics such as ticket volume, resolution time, and satisfaction rate.

**Summary:**

Including these metrics on the dashboard gives a data-driven, real-time overview of operational performance. It enables management to make informed decisions on staffing, training, technology investment, and process improvements, ultimately driving customer satisfaction and cost efficiency**.**