***IT Ticket Management Analysis Report***

***Objective Question & Answer***

1. Total Number of Attributes:

The “Tickets” sheet has **10** attributes.

The “IT Agents” sheet has **6** attributes.

1. Missing or Inconsistent Values:

Both sheets have **no** missing or inconsistent value.

1. Average Daily Ticket Volume:

The average daily ticket volume is **53.37 (53 approx.)** tickets/day.

We used the formula:

**=COUNTA(A2:A97499)/COUNTA(UNIQUE(B2:B97499))**

1. Distribution of Ticket Categories:

The distribution of Ticket categories across request category is as follow:

* Login Access: **29.94%**
* System: **40.00%**
* Software: **20.07%**
* Hardware: **9.98%**

1. Tickets Handled by Each Agent:

|  |  |
| --- | --- |
| **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** |

1. Extracting Domain from Email:

We use the formula refrence:

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

to extract the domain name.

1. Find the Full Name from Agent ID:

We use the formula:

**=VLOOKUP(E2,'IT Agents'!A:I,2,FALSE)**

to find the full name of each IT Agent.

1. Count of Each Issue Type:

|  |  |
| --- | --- |
| **Count of Each Issue Type** |  |
| **IT Request** | **73220** |
| **IT Error** | **24278** |

Issue type distribution:

* IT REQUEST: **73220**
* IT ERROR: **24278**

Formula used: **IT Request:** **=COUNTIF(I:I,"IT Request")**

**IT Error:** **=COUNTIF(I:I,"IT Error")**

1. Daily Average Resolution Time:

The daily average resolution time can be calculated by using the formula:

**=AVERAGE (N2: N97499)**

The daily average resolution time is **4.55** days.

1. Ticket Volume Over Time:

The volume of tickets has **increased** steadily from **2016** to **2020**.

1. Average Age of the IT Agents:

As there is no age column in the IT Agents sheet, we calculate the **age** of each agent using the column **Year of Birth, Month of Birth, Day of Birth.**

We use the formula: **=DATEDIF(DATE(Year of Birth, Month of Birth, Day of Birth),TODAY(),"y")** to create a new column called **Age**.

After that, we simply calculate the average age by using the formula: **=AVERAGE(H2:H51)**

The average age of IT agents is **39.98** years.

1. Correlation Between Severity and Resolution Time:

First, we create a new column called **Severity Type** next to **Severity** and use text to column to separate numerical value and text.

And then we calculate correlation between severity and resolution time by using the formula: **=CORREL(J2:J97499,N2:N97499)**

The correlation coefficient between severity and resolution time is

**-0.040536**.

The negative correlation indicates that as one variable increases, the other variables decrease, and vice versa.

1. Categorical Columns Count:

The dataset contains **6** categorical columns. (Both sheets combine)

**Ticket sheet**: Request Category, Issue Type, Severity, Priority.

**IT Agents Sheet**: Agent Name, Email.

***Subjective Question & Answer***

Q1. If there is an investment, should it be used to hire more IT agents, improve training programs, or upgrade ticket management software?

**We created a pivot table shows ticket handled, average resolution time, average satisfaction rate per agent and highlighted the cells where resolution time greater than 5 days and satisfaction rate less than 4.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Row Labels** | **Count of ID Ticket** | **Average of Resolution Time (Days)** | **Average of Satisfaction Rate** |
| 1 | 1969 | 5.44591163 | 4.340274251 |
| 2 | 1968 | 3.596544715 | 4.473577236 |
| 3 | 2021 | 5.381989114 | 3.615042058 |
| 4 | 1988 | 5.243963783 | 4.187625755 |
| 5 | 2000 | 4.259 | 4.376 |
| 6 | 1949 | 5.32067727 | 3.592611596 |
| 7 | 1935 | 5.524031008 | 3.97622739 |
| 8 | 1960 | 3.834183673 | 4.436734694 |
| 9 | 1949 | 4.523345305 | 3.690097486 |
| 10 | 1974 | 4.298378926 | 4.415906788 |
| 11 | 1956 | 4.778118609 | 3.63803681 |
| 12 | 1897 | 4.05640485 | 4.489720611 |
| 13 | 1856 | 5.322198276 | 4.282327586 |
| 14 | 1942 | 4.901132853 | 4.085478888 |
| 15 | 1991 | 3.655951783 | 4.4716223 |
| 16 | 1926 | 4.317757009 | 3.665109034 |
| 17 | 1961 | 3.705252422 | 4.341662417 |
| 18 | 1892 | 4.731501057 | 3.991014799 |
| 19 | 1984 | 4.999495968 | 3.04233871 |
| 20 | 1920 | 4.4078125 | 4.147916667 |
| 21 | 1889 | 3.705664373 | 4.401270513 |
| 22 | 1966 | 5.511190234 | 3.628179044 |
| 23 | 1915 | 4.55770235 | 4.377545692 |
| 24 | 2003 | 4.227159261 | 4.441337993 |
| 25 | 1906 | 5.204616999 | 3.601259182 |
| 26 | 1963 | 4.754457463 | 3.990830362 |
| 27 | 1968 | 3.651422764 | 4.222052846 |
| 28 | 1946 | 5.409558068 | 3.612024666 |
| 29 | 1931 | 3.716727084 | 4.461418954 |
| 30 | 1963 | 4.867040245 | 3.847682119 |
| 31 | 1987 | 3.66935078 | 4.364368395 |
| 32 | 1974 | 4.886524823 | 4.123100304 |
| 33 | 1958 | 4.804392237 | 3.631256384 |
| 34 | 1927 | 3.636222107 | 4.596782564 |
| 35 | 2007 | 4.369207773 | 4.399103139 |
| 36 | 1913 | 3.918452692 | 4.198118139 |
| 37 | 1931 | 4.595028483 | 3.660797514 |
| 38 | 1938 | 4.643446852 | 4.444272446 |
| 39 | 2026 | 5.554787759 | 4.344521224 |
| 40 | 1920 | 4.286979167 | 3.667708333 |
| 41 | 1966 | 4.554933876 | 3.783316378 |
| 42 | 1945 | 4.058097686 | 4.361953728 |
| 43 | 1897 | 3.846072746 | 3.913020559 |
| 44 | 1943 | 4.720020587 | 4.411219763 |
| 45 | 1929 | 3.700362882 | 3.821150855 |
| 46 | 1950 | 5.319487179 | 4.320512821 |
| 47 | 1933 | 3.824624935 | 4.170201759 |
| 48 | 2027 | 4.514553527 | 4.407992107 |
| 49 | 1890 | 5.343915344 | 4.355026455 |
| 50 | 1949 | 5.451513597 | 4.204720369 |
| **Grand Total** | **97498** | **4.553149808** | **4.100648218** |

1. **Hiring IT Agents:**

Across 97,498 tickets:

Average resolution time: 4.55 days

Average satisfaction: 4.10 / 5

* **High-Volume, Low-Efficiency Agents**

Agents with resolution times **>5 days** *and* satisfaction **<4.0** include: **1, 3, 6, 7, 22, 39, 49, 50**.  
This suggests these agents are **overloaded or under-skilled**, resulting in delayed service and unhappy customers.

* **Efficient, High-Satisfaction Agents**

Agents such as **2, 8, 12, 15, 17, 24, 29, 31, 34, 36, 44, 48** stand out.  
These represent **performance benchmarks**—fast and effective.

1. **Improving Training:**

We calculate new column called **Ratio,** by using average of satisfaction rate/average of resolution time for each agent. And Ratio less thn **0.7** is highlighted.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Row Labels** | **Count of ID Ticket** | **Average of Resolution Time (Days)** | **Average of Satisfaction Rate** | **Ratio** |
| 1 | 1969 | 5.44591163 | 4.340274251 | 0.796978 |
| 2 | 1968 | 3.596544715 | 4.473577236 | 1.243854 |
| 3 | 2021 | 5.381989114 | 3.615042058 | 0.671693 |
| 4 | 1988 | 5.243963783 | 4.187625755 | 0.798561 |
| 5 | 2000 | 4.259 | 4.376 | 1.027471 |
| 6 | 1949 | 5.32067727 | 3.592611596 | 0.675217 |
| 7 | 1935 | 5.524031008 | 3.97622739 | 0.719805 |
| 8 | 1960 | 3.834183673 | 4.436734694 | 1.157152 |
| 9 | 1949 | 4.523345305 | 3.690097486 | 0.815789 |
| 10 | 1974 | 4.298378926 | 4.415906788 | 1.027342 |
| 11 | 1956 | 4.778118609 | 3.63803681 | 0.761395 |
| 12 | 1897 | 4.05640485 | 4.489720611 | 1.106823 |
| 13 | 1856 | 5.322198276 | 4.282327586 | 0.804616 |
| 14 | 1942 | 4.901132853 | 4.085478888 | 0.833578 |
| 15 | 1991 | 3.655951783 | 4.4716223 | 1.223108 |
| 16 | 1926 | 4.317757009 | 3.665109034 | 0.848846 |
| 17 | 1961 | 3.705252422 | 4.341662417 | 1.171759 |
| 18 | 1892 | 4.731501057 | 3.991014799 | 0.843499 |
| 19 | 1984 | 4.999495968 | 3.04233871 | 0.608529 |
| 20 | 1920 | 4.4078125 | 4.147916667 | 0.941037 |
| 21 | 1889 | 3.705664373 | 4.401270513 | 1.187714 |
| 22 | 1966 | 5.511190234 | 3.628179044 | 0.658329 |
| 23 | 1915 | 4.55770235 | 4.377545692 | 0.960472 |
| 24 | 2003 | 4.227159261 | 4.441337993 | 1.050667 |
| 25 | 1906 | 5.204616999 | 3.601259182 | 0.691935 |
| 26 | 1963 | 4.754457463 | 3.990830362 | 0.839387 |
| 27 | 1968 | 3.651422764 | 4.222052846 | 1.156276 |
| 28 | 1946 | 5.409558068 | 3.612024666 | 0.667712 |
| 29 | 1931 | 3.716727084 | 4.461418954 | 1.200362 |
| 30 | 1963 | 4.867040245 | 3.847682119 | 0.790559 |
| 31 | 1987 | 3.66935078 | 4.364368395 | 1.189412 |
| 32 | 1974 | 4.886524823 | 4.123100304 | 0.843769 |
| 33 | 1958 | 4.804392237 | 3.631256384 | 0.75582 |
| 34 | 1927 | 3.636222107 | 4.596782564 | 1.264164 |
| 35 | 2007 | 4.369207773 | 4.399103139 | 1.006842 |
| 36 | 1913 | 3.918452692 | 4.198118139 | 1.071371 |
| 37 | 1931 | 4.595028483 | 3.660797514 | 0.796687 |
| 38 | 1938 | 4.643446852 | 4.444272446 | 0.957106 |
| 39 | 2026 | 5.554787759 | 4.344521224 | 0.782122 |
| 40 | 1920 | 4.286979167 | 3.667708333 | 0.855546 |
| 41 | 1966 | 4.554933876 | 3.783316378 | 0.830597 |
| 42 | 1945 | 4.058097686 | 4.361953728 | 1.074876 |
| 43 | 1897 | 3.846072746 | 3.913020559 | 1.017407 |
| 44 | 1943 | 4.720020587 | 4.411219763 | 0.934576 |
| 45 | 1929 | 3.700362882 | 3.821150855 | 1.032642 |
| 46 | 1950 | 5.319487179 | 4.320512821 | 0.812205 |
| 47 | 1933 | 3.824624935 | 4.170201759 | 1.090356 |
| 48 | 2027 | 4.514553527 | 4.407992107 | 0.976396 |
| 49 | 1890 | 5.343915344 | 4.355026455 | 0.81495 |
| 50 | 1949 | 5.451513597 | 4.204720369 | 0.771294 |
| **Grand Total** | **97498** | **4.553149808** | **4.100648218** | 0.900618 |

Agents such as **3,6, 19, 22, 25, 28** stand out with ratios below 0.75, indicating long ticket times and low satisfaction—clear signals for targeted training and workflow optimization.

1. **Upgrading Ticket Software:**

A pivot table is created by using Severity Type in Row, Priority Type in Column and average of resolution time in value.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Average of Resolution Time (Days)** | **Column Labels** |  |  |  |  |
| **Row Labels** | **High** | **Mid** | **Low** | **Unassiged** | **Grand Total** |
| Urgent | 0.552287582 | 1.559405941 | 4.00591716 | 3.5599022 | 2.001436782 |
| Mayor | 3.619759036 | 3.697054698 | 4.600977199 | 4.133193863 | 3.907981803 |
| Normal | 3.601558603 | 4.0639342 | 6.126815862 | 5.423544323 | 4.663609908 |
| Minor | 1.01183432 | 3.685503686 | 5.249544627 | 4.298722045 | 3.43534101 |
| Unclasified | 0.566037736 | 3 | 4.075 | 4.113043478 | 2.876404494 |
| **Grand Total** | **3.491828181** | **4.002082676** | **6.01054271** | **5.305644339** | **4.553149808** |

As highest severity type and highest priority type have lower resolution time, performance of Ticket Software is still effective but has room for upgrading.

**Recommendation:** If there is an investment, it should be used in improving training programs as it will improve both resolution time and satisfaction quickly and it is low cost and high impact. And if there is any excess investment left, it should be used in upgrading software tools.

Q2. Which agents need additional training based on their performance metrics?

To identify IT support agents who require additional training based on performance metrics.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Row Labels** | **Count of ID Ticket** | **Average of Resolution Time (Days)** | **Average of Satisfaction Rate** | **Ratio** |
| 1 | 1969 | 5.44591163 | 4.340274251 | 0.796978 |
| 2 | 1968 | 3.596544715 | 4.473577236 | 1.243854 |
| 3 | 2021 | 5.381989114 | 3.615042058 | 0.671693 |
| 4 | 1988 | 5.243963783 | 4.187625755 | 0.798561 |
| 5 | 2000 | 4.259 | 4.376 | 1.027471 |
| 6 | 1949 | 5.32067727 | 3.592611596 | 0.675217 |
| 7 | 1935 | 5.524031008 | 3.97622739 | 0.719805 |
| 8 | 1960 | 3.834183673 | 4.436734694 | 1.157152 |
| 9 | 1949 | 4.523345305 | 3.690097486 | 0.815789 |
| 10 | 1974 | 4.298378926 | 4.415906788 | 1.027342 |
| 11 | 1956 | 4.778118609 | 3.63803681 | 0.761395 |
| 12 | 1897 | 4.05640485 | 4.489720611 | 1.106823 |
| 13 | 1856 | 5.322198276 | 4.282327586 | 0.804616 |
| 14 | 1942 | 4.901132853 | 4.085478888 | 0.833578 |
| 15 | 1991 | 3.655951783 | 4.4716223 | 1.223108 |
| 16 | 1926 | 4.317757009 | 3.665109034 | 0.848846 |
| 17 | 1961 | 3.705252422 | 4.341662417 | 1.171759 |
| 18 | 1892 | 4.731501057 | 3.991014799 | 0.843499 |
| 19 | 1984 | 4.999495968 | 3.04233871 | 0.608529 |
| 20 | 1920 | 4.4078125 | 4.147916667 | 0.941037 |
| 21 | 1889 | 3.705664373 | 4.401270513 | 1.187714 |
| 22 | 1966 | 5.511190234 | 3.628179044 | 0.658329 |
| 23 | 1915 | 4.55770235 | 4.377545692 | 0.960472 |
| 24 | 2003 | 4.227159261 | 4.441337993 | 1.050667 |
| 25 | 1906 | 5.204616999 | 3.601259182 | 0.691935 |
| 26 | 1963 | 4.754457463 | 3.990830362 | 0.839387 |
| 27 | 1968 | 3.651422764 | 4.222052846 | 1.156276 |
| 28 | 1946 | 5.409558068 | 3.612024666 | 0.667712 |
| 29 | 1931 | 3.716727084 | 4.461418954 | 1.200362 |
| 30 | 1963 | 4.867040245 | 3.847682119 | 0.790559 |
| 31 | 1987 | 3.66935078 | 4.364368395 | 1.189412 |
| 32 | 1974 | 4.886524823 | 4.123100304 | 0.843769 |
| 33 | 1958 | 4.804392237 | 3.631256384 | 0.75582 |
| 34 | 1927 | 3.636222107 | 4.596782564 | 1.264164 |
| 35 | 2007 | 4.369207773 | 4.399103139 | 1.006842 |
| 36 | 1913 | 3.918452692 | 4.198118139 | 1.071371 |
| 37 | 1931 | 4.595028483 | 3.660797514 | 0.796687 |
| 38 | 1938 | 4.643446852 | 4.444272446 | 0.957106 |
| 39 | 2026 | 5.554787759 | 4.344521224 | 0.782122 |
| 40 | 1920 | 4.286979167 | 3.667708333 | 0.855546 |
| 41 | 1966 | 4.554933876 | 3.783316378 | 0.830597 |
| 42 | 1945 | 4.058097686 | 4.361953728 | 1.074876 |
| 43 | 1897 | 3.846072746 | 3.913020559 | 1.017407 |
| 44 | 1943 | 4.720020587 | 4.411219763 | 0.934576 |
| 45 | 1929 | 3.700362882 | 3.821150855 | 1.032642 |
| 46 | 1950 | 5.319487179 | 4.320512821 | 0.812205 |
| 47 | 1933 | 3.824624935 | 4.170201759 | 1.090356 |
| 48 | 2027 | 4.514553527 | 4.407992107 | 0.976396 |
| 49 | 1890 | 5.343915344 | 4.355026455 | 0.81495 |
| 50 | 1949 | 5.451513597 | 4.204720369 | 0.771294 |
| **Grand Total** | **97498** | **4.553149808** | **4.100648218** | 0.900618 |

**Recommendation:** Agents such as **3, 6, 19, 22, 25, 28** shows **lower ratio.** Lower ratios indicate slower resolution time and lower satisfaction rate—markers of underperformance.

These agents are ideal candidates for targeted training.

Q3. Do certain categories of requests have longer resolution times?

To determine whether certain categories of IT support requests take longer to resolve, which can help allocate resources more efficiently.

A pivot table is created in the IT Ticket dataset, and average resolution times of each request category is calculated.

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

**Insights:** Categories like **Hardware, Software & System** have higher average resolution times.

Q4. How effective are the current software tools in managing IT tickets?

To check the effectiveness of current software tools in managing IT tickets,

a pivot table is created by using Severity Type in Row, Priority Type in Column and average of resolution time in value.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Average of Resolution Time (Days)** | **Column Labels** |  |  |  |  |
| **Row Labels** | **High** | **Mid** | **Low** | **Unassiged** | **Grand Total** |
| Urgent | 0.552287582 | 1.559405941 | 4.00591716 | 3.5599022 | 2.001436782 |
| Mayor | 3.619759036 | 3.697054698 | 4.600977199 | 4.133193863 | 3.907981803 |
| Normal | 3.601558603 | 4.0639342 | 6.126815862 | 5.423544323 | 4.663609908 |
| Minor | 1.01183432 | 3.685503686 | 5.249544627 | 4.298722045 | 3.43534101 |
| Unclasified | 0.566037736 | 3 | 4.075 | 4.113043478 | 2.876404494 |
| **Grand Total** | **3.491828181** | **4.002082676** | **6.01054271** | **5.305644339** | **4.553149808** |

**Insight:** Higher severity type and higher priority type have lower average resolution time, while lower severity type and lower priority type have higher average resolution time.

**Recommendation:** The current software tools in managing IT tickets are still effective, but it has room for improvement, making it more efficient.

Q5. How has the performance of the IT support team changed over time (e.g., monthly or quarterly)?

To evaluate how performance of IT support team has changed over time by analyzing ticket volume, average resolution time, and satisfaction scores on a monthly basis.

A pivot table is used to group the data by time period and calculated total ticket volume, average satisfaction score and average resolution time.

|  |  |  |  |
| --- | --- | --- | --- |
| **Row Labels** | **Count of ID Ticket** | **Average of Satisfaction Rate** | **Average of Resolution Time (Days)** |
| 2016-Jan | 1115 | 3.960538117 | 4.565022422 |
| 2016-Feb | 1056 | 3.934659091 | 4.596590909 |
| 2016-Mar | 1105 | 3.949321267 | 4.482352941 |
| 2016-Apr | 1054 | 4.012333966 | 4.581593928 |
| 2016-May | 1160 | 3.93362069 | 4.68362069 |
| 2016-Jun | 1051 | 3.955280685 | 4.593720266 |
| 2016-Jul | 1101 | 3.950953678 | 4.685740236 |
| 2016-Aug | 1090 | 3.999082569 | 4.448623853 |
| 2016-Sep | 1061 | 4.004712535 | 4.488218662 |
| 2016-Oct | 1088 | 3.959558824 | 4.511029412 |
| 2016-Nov | 1046 | 4.043021033 | 4.535372849 |
| 2016-Dec | 1124 | 4.056939502 | 4.444839858 |
| 2017-Jan | 1125 | 4.143111111 | 4.779555556 |
| 2017-Feb | 1151 | 4.020851434 | 4.499565595 |
| 2017-Mar | 1283 | 4.036632892 | 4.424785659 |
| 2017-Apr | 1245 | 4.053012048 | 4.506827309 |
| 2017-May | 1345 | 4.028996283 | 4.498141264 |
| 2017-Jun | 1244 | 4.102090032 | 4.502411576 |
| 2017-Jul | 1233 | 4.081914031 | 4.401459854 |
| 2017-Aug | 1259 | 4.051628276 | 4.725178713 |
| 2017-Sep | 1225 | 4.065306122 | 4.457959184 |
| 2017-Oct | 1305 | 4.098084291 | 4.51954023 |
| 2017-Nov | 1243 | 4.066773934 | 4.648431215 |
| 2017-Dec | 1257 | 4.07557677 | 4.421638823 |
| 2018-Jan | 1289 | 4.226532196 | 4.457719162 |
| 2018-Feb | 1507 | 4.057067021 | 4.549435965 |
| 2018-Mar | 1470 | 4.114965986 | 4.634013605 |
| 2018-Apr | 1627 | 4.100184388 | 4.64105716 |
| 2018-May | 1653 | 4.056866304 | 4.629159105 |
| 2018-Jun | 1656 | 4.060990338 | 4.68236715 |
| 2018-Jul | 1620 | 4.079012346 | 4.537037037 |
| 2018-Aug | 1669 | 4.089275015 | 4.370281606 |
| 2018-Sep | 1638 | 4.094627595 | 4.592796093 |
| 2018-Oct | 1660 | 4.056024096 | 4.502409639 |
| 2018-Nov | 1626 | 4.103321033 | 4.4600246 |
| 2018-Dec | 1539 | 4.092917479 | 4.640025991 |
| 2019-Jan | 1522 | 4.20565046 | 4.562417871 |
| 2019-Feb | 1746 | 4.078465063 | 4.652920962 |
| 2019-Mar | 1846 | 4.121343445 | 4.454496208 |
| 2019-Apr | 1598 | 4.17709637 | 4.504380476 |
| 2019-May | 1734 | 4.169550173 | 4.418685121 |
| 2019-Jun | 1820 | 4.084065934 | 4.578571429 |
| 2019-Jul | 1885 | 4.116180371 | 4.485941645 |
| 2019-Aug | 1905 | 4.139632546 | 4.53175853 |
| 2019-Sep | 1856 | 4.123922414 | 4.469827586 |
| 2019-Oct | 1875 | 4.1024 | 4.6688 |
| 2019-Nov | 1831 | 4.098853086 | 4.410158383 |
| 2019-Dec | 1872 | 4.073717949 | 4.516025641 |
| 2020-Jan | 2191 | 4.171611136 | 4.555454131 |
| 2020-Feb | 2441 | 4.159360918 | 4.597705858 |
| 2020-Mar | 2524 | 4.087955626 | 4.687797147 |
| 2020-Apr | 2413 | 4.156651471 | 4.5681724 |
| 2020-May | 2229 | 4.246298789 | 4.596680126 |
| 2020-Jun | 2370 | 4.176793249 | 4.680168776 |
| 2020-Jul | 2231 | 4.272075303 | 4.645002241 |
| 2020-Aug | 2566 | 4.139516758 | 4.481683554 |
| 2020-Sep | 2439 | 4.152111521 | 4.494054941 |
| 2020-Oct | 2567 | 4.125438255 | 4.568757304 |
| 2020-Nov | 2508 | 4.11722488 | 4.520733652 |
| 2020-Dec | 2609 | 4.155615178 | 4.640858567 |
| **Grand Total** | **97498** | **4.100648218** | **4.553149808** |

**Insights:**

Over five years, the IT support team transformed from a foundational service unit to a scalable, high-performing function—handling nearly 2.5x the workload with higher user satisfaction and stable resolution times.

Q6. If we invest more on tech (Hardware, software, etc), do you think it will improve the ticket resolution times and employee satisfaction?

To evaluate whether increased investment in tech is likely to improve IT Tickets resolution times and employee satisfaction levels based on historical trends.

|  |  |  |  |
| --- | --- | --- | --- |
| **Row Labels** | **Count of ID Ticket** | **Average of Satisfaction Rate** | **Average of Resolution Time (Days)** |
| 2016-Jan | 1115 | 3.960538117 | 4.565022422 |
| 2016-Feb | 1056 | 3.934659091 | 4.596590909 |
| 2016-Mar | 1105 | 3.949321267 | 4.482352941 |
| 2016-Apr | 1054 | 4.012333966 | 4.581593928 |
| 2016-May | 1160 | 3.93362069 | 4.68362069 |
| 2016-Jun | 1051 | 3.955280685 | 4.593720266 |
| 2016-Jul | 1101 | 3.950953678 | 4.685740236 |
| 2016-Aug | 1090 | 3.999082569 | 4.448623853 |
| 2016-Sep | 1061 | 4.004712535 | 4.488218662 |
| 2016-Oct | 1088 | 3.959558824 | 4.511029412 |
| 2016-Nov | 1046 | 4.043021033 | 4.535372849 |
| 2016-Dec | 1124 | 4.056939502 | 4.444839858 |
| 2017-Jan | 1125 | 4.143111111 | 4.779555556 |
| 2017-Feb | 1151 | 4.020851434 | 4.499565595 |
| 2017-Mar | 1283 | 4.036632892 | 4.424785659 |
| 2017-Apr | 1245 | 4.053012048 | 4.506827309 |
| 2017-May | 1345 | 4.028996283 | 4.498141264 |
| 2017-Jun | 1244 | 4.102090032 | 4.502411576 |
| 2017-Jul | 1233 | 4.081914031 | 4.401459854 |
| 2017-Aug | 1259 | 4.051628276 | 4.725178713 |
| 2017-Sep | 1225 | 4.065306122 | 4.457959184 |
| 2017-Oct | 1305 | 4.098084291 | 4.51954023 |
| 2017-Nov | 1243 | 4.066773934 | 4.648431215 |
| 2017-Dec | 1257 | 4.07557677 | 4.421638823 |
| 2018-Jan | 1289 | 4.226532196 | 4.457719162 |
| 2018-Feb | 1507 | 4.057067021 | 4.549435965 |
| 2018-Mar | 1470 | 4.114965986 | 4.634013605 |
| 2018-Apr | 1627 | 4.100184388 | 4.64105716 |
| 2018-May | 1653 | 4.056866304 | 4.629159105 |
| 2018-Jun | 1656 | 4.060990338 | 4.68236715 |
| 2018-Jul | 1620 | 4.079012346 | 4.537037037 |
| 2018-Aug | 1669 | 4.089275015 | 4.370281606 |
| 2018-Sep | 1638 | 4.094627595 | 4.592796093 |
| 2018-Oct | 1660 | 4.056024096 | 4.502409639 |
| 2018-Nov | 1626 | 4.103321033 | 4.4600246 |
| 2018-Dec | 1539 | 4.092917479 | 4.640025991 |
| 2019-Jan | 1522 | 4.20565046 | 4.562417871 |
| 2019-Feb | 1746 | 4.078465063 | 4.652920962 |
| 2019-Mar | 1846 | 4.121343445 | 4.454496208 |
| 2019-Apr | 1598 | 4.17709637 | 4.504380476 |
| 2019-May | 1734 | 4.169550173 | 4.418685121 |
| 2019-Jun | 1820 | 4.084065934 | 4.578571429 |
| 2019-Jul | 1885 | 4.116180371 | 4.485941645 |
| 2019-Aug | 1905 | 4.139632546 | 4.53175853 |
| 2019-Sep | 1856 | 4.123922414 | 4.469827586 |
| 2019-Oct | 1875 | 4.1024 | 4.6688 |
| 2019-Nov | 1831 | 4.098853086 | 4.410158383 |
| 2019-Dec | 1872 | 4.073717949 | 4.516025641 |
| 2020-Jan | 2191 | 4.171611136 | 4.555454131 |
| 2020-Feb | 2441 | 4.159360918 | 4.597705858 |
| 2020-Mar | 2524 | 4.087955626 | 4.687797147 |
| 2020-Apr | 2413 | 4.156651471 | 4.5681724 |
| 2020-May | 2229 | 4.246298789 | 4.596680126 |
| 2020-Jun | 2370 | 4.176793249 | 4.680168776 |
| 2020-Jul | 2231 | 4.272075303 | 4.645002241 |
| 2020-Aug | 2566 | 4.139516758 | 4.481683554 |
| 2020-Sep | 2439 | 4.152111521 | 4.494054941 |
| 2020-Oct | 2567 | 4.125438255 | 4.568757304 |
| 2020-Nov | 2508 | 4.11722488 | 4.520733652 |
| 2020-Dec | 2609 | 4.155615178 | 4.640858567 |
| **Grand Total** | **97498** | **4.100648218** | **4.553149808** |

Historical data analyzed to identify performance improvements. Key metrics considered include: Average resolution time, Satisfaction scores, Ticket volume.

We analyzed trends over time to forecast potential impact.

* Ticket Volume Grew by **140%** (**2016: ~13,000 tickets - 2020: ~31,000 tickets**).
* Across 60 months, resolution time stays between **4.4 – 4.7 days**. Even with rising demand, no significant improvement beyond this range.
* Satisfaction Has Gradually Improved.

2016: 4.0 average to 2020: Peaking at **4.3 in July 2020**, during the highest volume year.

Satisfaction grows slowly and correlates with **response quality and speed**.

**Recommendation:** Yes, investing in better hardware, software, and automation is highly likely to reduce resolution times and improve satisfaction.

Q7. What are the key performance metrics for IT agents, and how can they be improved, do we need to fire any agents?

To evaluate IT agent performance using measurable KPIs and determine if any agents require additional support or disciplinary review.

Performance was evaluated using three metrics:

* **Average Resolution Time**
* **Number of Tickets Resolved**
* **Average Satisfaction Score**

An Excel pivot table was created with **Agent ID**  in the rows and:

* Count of **Ticket ID**
* Average of **Resolution Time**
* Average of  **Satisfaction Score**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Row Labels** | **Count of ID Ticket** | **Average of Resolution Time (Days)** | **Average of Satisfaction Rate** | **Ratio** |
| 1 | 1969 | 5.44591163 | 4.3403 | 0.797 |
| 2 | 1968 | 3.596544715 | 4.4736 | 1.244 |
| 3 | 2021 | 5.381989114 | 3.615 | 0.672 |
| 4 | 1988 | 5.243963783 | 4.1876 | 0.799 |
| 5 | 2000 | 4.259 | 4.376 | 1.027 |
| 6 | 1949 | 5.32067727 | 3.5926 | 0.675 |
| 7 | 1935 | 5.524031008 | 3.9762 | 0.72 |
| 8 | 1960 | 3.834183673 | 4.4367 | 1.157 |
| 9 | 1949 | 4.523345305 | 3.6901 | 0.816 |
| 10 | 1974 | 4.298378926 | 4.4159 | 1.027 |
| 11 | 1956 | 4.778118609 | 3.638 | 0.761 |
| 12 | 1897 | 4.05640485 | 4.4897 | 1.107 |
| 13 | 1856 | 5.322198276 | 4.2823 | 0.805 |
| 14 | 1942 | 4.901132853 | 4.0855 | 0.834 |
| 15 | 1991 | 3.655951783 | 4.4716 | 1.223 |
| 16 | 1926 | 4.317757009 | 3.6651 | 0.849 |
| 17 | 1961 | 3.705252422 | 4.3417 | 1.172 |
| 18 | 1892 | 4.731501057 | 3.991 | 0.843 |
| 19 | 1984 | 4.999495968 | 3.0423 | 0.609 |
| 20 | 1920 | 4.4078125 | 4.1479 | 0.941 |
| 21 | 1889 | 3.705664373 | 4.4013 | 1.188 |
| 22 | 1966 | 5.511190234 | 3.6282 | 0.658 |
| 23 | 1915 | 4.55770235 | 4.3775 | 0.96 |
| 24 | 2003 | 4.227159261 | 4.4413 | 1.051 |
| 25 | 1906 | 5.204616999 | 3.6013 | 0.692 |
| 26 | 1963 | 4.754457463 | 3.9908 | 0.839 |
| 27 | 1968 | 3.651422764 | 4.2221 | 1.156 |
| 28 | 1946 | 5.409558068 | 3.612 | 0.668 |
| 29 | 1931 | 3.716727084 | 4.4614 | 1.2 |
| 30 | 1963 | 4.867040245 | 3.8477 | 0.791 |
| 31 | 1987 | 3.66935078 | 4.3644 | 1.189 |
| 32 | 1974 | 4.886524823 | 4.1231 | 0.844 |
| 33 | 1958 | 4.804392237 | 3.6313 | 0.756 |
| 34 | 1927 | 3.636222107 | 4.5968 | 1.264 |
| 35 | 2007 | 4.369207773 | 4.3991 | 1.007 |
| 36 | 1913 | 3.918452692 | 4.1981 | 1.071 |
| 37 | 1931 | 4.595028483 | 3.6608 | 0.797 |
| 38 | 1938 | 4.643446852 | 4.4443 | 0.957 |
| 39 | 2026 | 5.554787759 | 4.3445 | 0.782 |
| 40 | 1920 | 4.286979167 | 3.6677 | 0.856 |
| 41 | 1966 | 4.554933876 | 3.7833 | 0.831 |
| 42 | 1945 | 4.058097686 | 4.362 | 1.075 |
| 43 | 1897 | 3.846072746 | 3.913 | 1.017 |
| 44 | 1943 | 4.720020587 | 4.4112 | 0.935 |
| 45 | 1929 | 3.700362882 | 3.8212 | 1.033 |
| 46 | 1950 | 5.319487179 | 4.3205 | 0.812 |
| 47 | 1933 | 3.824624935 | 4.1702 | 1.09 |
| 48 | 2027 | 4.514553527 | 4.408 | 0.976 |
| 49 | 1890 | 5.343915344 | 4.355 | 0.815 |
| 50 | 1949 | 5.451513597 | 4.2047 | 0.771 |
| **Grand Total** | **97498** | **4.553149808** | **4.1006** | 0.901 |

**Insights:** Some agents have higher resolution time (greater than 5) or lower satisfaction rate (less than 4) while some of them have both.

**Recommendation**: Provide targeted training for agents who have higher resolution time or lower satisfaction rate. Agents such as 3, 6, 19, 22, 25, 28 show lower ratios indicating both longer resolution time and lower satisfaction rate, they need to be fire.

Q8. How do employee demographics (e.g., department, seniority) impact satisfaction and ticket outcomes?

To determine whether an Agent’s age impacts ticket resolution effectively and customer satisfaction.

The dataset includes agent age. A new column,  **Age Group** was created to segment agents (e.g. <30,31-40, etc.)

A pivote table was used to calculate **average resolution time**, **average satisfaction rate** per age group.

|  |  |  |
| --- | --- | --- |
| **Row Labels** | **Average of Resolution Time (Days)** | **Average of Satisfaction Rate** |
| <30 | 4.57469578 | 4.230258048 |
| 30-40 | 4.642678856 | 4.129281569 |
| 41-50 | 4.582020865 | 3.992158702 |
| <50 | 3.980747308 | 4.404939835 |
| **Grand Total** | **4.553149808** | **4.100648218** |

**Insights:**

**Under 30**: Exhibits the highest satisfaction rate (4.2) and a moderate resolution time (4.5 days).

**30–40**: Displays a balanced satisfaction rate (4.12) with a slightly higher resolution time (4.64 days).

**41–50**: Shows the lowest satisfaction rate (3.99) and a resolution time of 4.58 days.

**Over 50**: Demonstrates the lowest resolution time (3.98 days) and a high satisfaction rate (4.40).

**Recommendation:** Targeted training for age group **30-40** and **41-50** to address skill gaps and improve efficiency. Training could focus on problem solving and time management.

Q9. Identify the trends for IT support operations based on ticket volumes and satisfaction, and mention the peak and stable times?

To identify trends in IT ticket volumes and satisfaction over time, highlighting the peak and stable periods in support activity.

A pivot Table and combo chart were created in Excel using Years for rows, ID Ticket for ticket volume, Satisfaction rate for customer feedback.

This allowed visualizing trends in support workload and user satisfaction.

**Insights**: Gradual Increase in Ticket Volumes: Over the five-year period, there is a consistent upward trend in the number of tickets submitted, with notable peak in 2020.

Despite the increase in ticket volumes, satisfaction rates remained relatively stable, hovering around 4.10. This stability suggests that while the volume of requests grew, the quality of support provided maintained a consistent standard.

**Recommendation:** Prepare for peak ticket volumes by proactively scaling resources or implementing temporary processes like additional staff support or extended working hours.

Regularly assess staffing levels and satisfaction trends during periods of high demand to ensure that performance standard are maintained.

During the period of stable demand, focus on refining ticket resolution processes and implementing improvements that can help manage higher volumes in peak periods more efficiently.

Q10. What metrics should be included in the final dashboard to provide a comprehensive view of call center performance and guide investment decisions?

To define the most valuable metrics that provide a complete view of IT support operations and guide strategic investment decisions.

* **Count of ticket IDs by time**
* **Count of tickets by request category**
* **Satisfaction rate by time**
* **Average resolution time by request category**
* **Age group by satisfaction rate.**
* **Ticket by severity rate**
* **Distribution of tickets based on satisfaction score**
* **Distribution of tickets based on Resolution time**

Use Slicers:

**Year, Priority, Severity, Issue Type, Request Category Type**