**Tasks**

**Objective Questions**:

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

Total attributes in Table Tickets: 10  
  
Total attributes in Table IT Agents: 6  
  
Total Unique Attributes : 15

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

This Data Set doesn't countain any missing value

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

|  |  |
| --- | --- |
| Years | Count of ID Ticket |
| 2016 | 13051 |
| 2017 | 14915 |
| 2018 | 18954 |
| 2019 | 21490 |
| 2020 | 29088 |
| Grand Total | 97498 |

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

|  |
| --- |
| Average Ticket Per Day |
| 53.30727173 |

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

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

1. **How many tickets has each agent handled?**

|  |  |
| --- | --- |
| **Agent Name** | **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 |

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

=RIGHT('IT Agents'!C2, LEN('IT Agents'!C2) - FIND("@",'IT Agents'!C2))

fp20analytics.com

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

=VLOOKUP([@[Agent ID]],IT\_Agents[#All],2,0)

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

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

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

4.553149808

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

* **Overall growth: Ticket volume nearly doubled from 2016 to 2020.**
* **Steady year-over-year increase: Suggests consistent demand for IT support.**
* **Possible cause for 2020 spike: Could relate to remote work transitions (Due To Covid) , infrastructure upgrades, or increased system usage.**

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

40.28

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

-0.040536349

* A correlation value of **−0.0405** indicates **almost no correlation** between **issue severity** and **resolution time**.
* Both low- and high-severity tickets are likely resolved in similar timeframes.

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

* Tickets Table: ID Ticket, Fecha, Employee ID, Agent ID, Request Category, Issue Type, Severity, Priority → 8 categorical columns
* Agents Table: Agent ID, Full Name, Email, Month of Birth, Day of Birth → 4 categorical columns
* Answer: Approximately 12 categorical columns in the combined dataset.

**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.

|  |  |
| --- | --- |
| Total No of agent | 50 |
| Average Resolution Time | 4.553149808 |
| Average Satisfaction Rate | 4.100648218 |
| Ticket per day | 53.30727173 |
| Correlation between RT and SR | -0.003623335 |

The **correlation between resolution time and satisfaction (-0.0036)** indicates almost **no relationship**, meaning faster resolutions don’t necessarily guarantee happier users.

* Agents with StdDev of Resolution Time (Days) more than 4.8

|  |  |
| --- | --- |
| Agent Name | StdDev of Resolution Time (Days) |
| Nurio Zepeda | 5.137421668 |
| Mata Lucero | 5.091265116 |
| Jesus Contreras | 5.090607112 |
| Ramon Macias | 5.074530154 |
| Estuardo Ocaño | 5.056384895 |
| Lorena | 5.050143163 |
| Griselda Galindo | 4.991060765 |
| Barraza Alberto | 4.982035042 |
| Rosa Olguin | 4.972575353 |
| Armando Sierra | 4.964055822 |
| A. Trejo | 4.944692917 |
| Elena Velez | 4.911045562 |
| Sandra Lujan | 4.907340871 |

* Agents with StdDev of Satisfaction Rate more than 1.44

|  |  |
| --- | --- |
| Agent Name | StdDev of Satisfaction Rate |
| Alfonso Barraza | 1.621284853 |
| Luis Arguello | 1.606085588 |
| Orci Carlos | 1.560052501 |
| Alfredo Barreras | 1.536086321 |
| Guadalupe Villanueva | 1.527095946 |
| Velasquez Jose | 1.521714639 |
| Lopez Moran. | 1.521160222 |
| Jesus Pacheco | 1.520639075 |
| Sandra Lujan | 1.494865574 |
| Reyna Santacruz | 1.488466275 |
| Aldo Carrillo | 1.478203431 |
| Nurio Zepeda | 1.462834981 |
| A. Trejo | 1.454394602 |
| Elena Velez | 1.452294654 |

* **Variation in Performance (StdDev):**
* Several agents show **high variation in Resolution Time (>4.8 days)** such as *Nurio Zepeda, Mata Lucero, Jesus Contreras, Ramon Macias, Estuardo Ocaño, Lorena, and Griselda Galindo*, suggesting inconsistent efficiency or workload imbalance.
* Similarly, **high variation in Satisfaction Rate (>1.44)** is observed for *Alfonso Barraza, Luis Arguello, Orci Carlos, Alfredo Barreras, and Sandra Lujan*, indicating inconsistent service quality.
* Common Agent in both table

|  |
| --- |
| Nurio Zepeda |
| A. Trejo |
| Elena Velez |
| Sandra Lujan |

* **Insights:**
* The inconsistency across agents shows that **training and process optimization** could yield more uniform performance.
* Since resolution time variation is high but not directly tied to satisfaction, simply **hiring more agents** may not solve the core issue.
* Instead, **upgrading ticket management software** and **conducting focused training** for underperforming agents would likely stabilize both resolution and satisfaction levels.
* **Recommendation:**  
  Prioritize **training programs** and **software upgrades** over new hires to improve consistency and efficiency across agents.

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

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

Agents Having Average Resolution time more than 4.8 Days

|  |
| --- |
| **Agent Name** |
| Jesus Contreras |
| Estuardo Ocaño |
| Lorena |
| Ramon Macias |
| Mata Lucero |
| Nurio Zepeda |
| Elena Velez |
| Armando Sierra |
| Griselda Galindo |
| A. Trejo |
| Rosa Olguin |
| Barraza Alberto |
| Sandra Lujan |
| Alfonso Barraza |
| EstuardoTorres |
| Silvia Morales |
| Parra Luna |
| Guadalupe Villanueva |

Agents Having Average Satisfaction Rate Less than 4.0

|  |
| --- |
| **Agent Name** |
| Alfonso Barraza |
| A. Trejo |
| Sandra Lujan |
| Nurio Zepeda |
| Elena Velez |
| Lorena |
| Guadalupe Villanueva |
| Lopez Moran. |
| Jesus Pacheco |
| Orci Carlos |
| Alfredo Barreras |
| Velasquez Jose |
| Aldo Carrillo |
| Luis Arguello |
| Parra Luna |
| Reyna Santacruz |
| Estuardo Ocaño |
| Flores Sierra |

**Common Agent Between These two Table**

|  |
| --- |
| Estuardo Ocaño |
| Lorena |
| Nurio Zepeda |
| Elena Velez |
| A. Trejo |
| Sandra Lujan |
| Alfonso Barraza |
| Parra Luna |
| Guadalupe Villanueva |

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

Analysis: Analyze the resolution times by request category.

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

Analysis of resolution times by request category shows that different types of requests take significantly different amounts of time to resolve. **Login Access** requests are resolved the fastest, with an average of **0.31 days**, while **Hardware** requests take the longest, averaging **7.63 days**. **Software** and **System** requests fall in between, at **5.24 days** and **6.62 days** respectively. Overall, the grand average resolution time across all categories is **4.55 days**.

Resources or process improvements should be focused on **Hardware** and **System** requests to reduce delays and improve overall efficiency.

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

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

* Using current performance metrics, we evaluate how well the IT ticket management system supports agents. The **grand average resolution time** across all tickets is **4.37 days**, while the **grand average satisfaction rate** standard deviation is **1.26**, indicating moderate variability among agents. Some agents show high variability in resolution time (up to 5.13 days) and satisfaction rate (up to 1.62), suggesting inconsistent performance.
* Category-wise, **Hardware requests** take the longest to resolve (**7.63 days**) followed by **System (6.62 days)** and **Software (5.24 days)**, while **Login Access requests** are resolved fastest (**0.31 days**).
* **Insight:** While the software supports basic ticket handling, high variability in agent performance and long resolution times for certain categories suggest the tools are not fully effective in ensuring consistent, fast ticket resolution. Investments in **process improvements, better automation, or targeted training** may help reduce these gaps.

|  |  |  |
| --- | --- | --- |
| **5. How has the performance of the IT support team changed over time (e.g., monthly or quarterly)?** | | |
| **Agent Name** | **Average of Resolution Time (Days)** | **Average of Satisfaction Rate** |
| **2016** |  |  |
| Jan | 4.565022422 | 3.960538117 |
| Feb | 4.596590909 | 3.934659091 |
| Mar | 4.482352941 | 3.949321267 |
| Apr | 4.581593928 | 4.012333966 |
| May | 4.68362069 | 3.93362069 |
| Jun | 4.593720266 | 3.955280685 |
| Jul | 4.685740236 | 3.950953678 |
| Aug | 4.448623853 | 3.999082569 |
| Sep | 4.488218662 | 4.004712535 |
| Oct | 4.511029412 | 3.959558824 |
| Nov | 4.535372849 | 4.043021033 |
| Dec | 4.444839858 | 4.056939502 |
| **2017** |  |  |
| Jan | 4.779555556 | 4.143111111 |
| Feb | 4.499565595 | 4.020851434 |
| Mar | 4.424785659 | 4.036632892 |
| Apr | 4.506827309 | 4.053012048 |
| May | 4.498141264 | 4.028996283 |
| Jun | 4.502411576 | 4.102090032 |
| Jul | 4.401459854 | 4.081914031 |
| Aug | 4.725178713 | 4.051628276 |
| Sep | 4.457959184 | 4.065306122 |
| Oct | 4.51954023 | 4.098084291 |
| Nov | 4.648431215 | 4.066773934 |
| Dec | 4.421638823 | 4.07557677 |
| **2018** |  |  |
| Jan | 4.457719162 | 4.226532196 |
| Feb | 4.549435965 | 4.057067021 |
| Mar | 4.634013605 | 4.114965986 |
| Apr | 4.64105716 | 4.100184388 |
| May | 4.629159105 | 4.056866304 |
| Jun | 4.68236715 | 4.060990338 |
| Jul | 4.537037037 | 4.079012346 |
| Aug | 4.370281606 | 4.089275015 |
| Sep | 4.592796093 | 4.094627595 |
| Oct | 4.502409639 | 4.056024096 |
| Nov | 4.4600246 | 4.103321033 |
| Dec | 4.640025991 | 4.092917479 |
| **2019** |  |  |
| Jan | 4.562417871 | 4.20565046 |
| Feb | 4.652920962 | 4.078465063 |
| Mar | 4.454496208 | 4.121343445 |
| Apr | 4.504380476 | 4.17709637 |
| May | 4.418685121 | 4.169550173 |
| Jun | 4.578571429 | 4.084065934 |
| Jul | 4.485941645 | 4.116180371 |
| Aug | 4.53175853 | 4.139632546 |
| Sep | 4.469827586 | 4.123922414 |
| Oct | 4.6688 | 4.1024 |
| Nov | 4.410158383 | 4.098853086 |
| Dec | 4.516025641 | 4.073717949 |
| **2020** |  |  |
| Jan | 4.555454131 | 4.171611136 |
| Feb | 4.597705858 | 4.159360918 |
| Mar | 4.687797147 | 4.087955626 |
| Apr | 4.5681724 | 4.156651471 |
| May | 4.596680126 | 4.246298789 |
| Jun | 4.680168776 | 4.176793249 |
| Jul | 4.645002241 | 4.272075303 |
| Aug | 4.481683554 | 4.139516758 |
| Sep | 4.494054941 | 4.152111521 |
| Oct | 4.568757304 | 4.125438255 |
| Nov | 4.520733652 | 4.11722488 |
| Dec | 4.640858567 | 4.155615178 |
| **Grand Total** | **4.553149808** | **4.100648218** |

**IT Support Team Performance Over Time:**  
From **2016 to 2020**, the **average resolution time** remained stable around **4.5 days**, showing consistent operational efficiency. However, the **average satisfaction rate** improved gradually from **~3.95 in 2016** to **~4.17 in 2020**, indicating better service quality and customer experience. Minor fluctuations suggest periods of heavier workload or system changes, but overall, the data reflects a **steady improvement in user satisfaction with consistent resolution performance**.

**6. 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.

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

Hardware and System requests take significantly

longer to resolve — these are the main

bottlenecks.

|  |  |  |
| --- | --- | --- |
| **Agent Name** | **Average of Satisfaction Rate** | |
| Hardware | 4.100996609 | |
| Login Access | 4.094508958 | |
| Software | 4.106336229 | |
| System | 4.102302446 | |
| **Grand Total** | **4.100648218** | |
| Correlation Between Resolution Time and Satisfaction Rate | |
| -0.003623335 | |

The correlation between **average resolution time** and **satisfaction rate** is **-0.0036**, which is **almost zero**.

This indicates that **resolution speed alone does not strongly influence satisfaction** — users’ satisfaction levels are likely affected by **other factors** such as **issue type, communication quality, or support responsiveness**.

Hence, while investing in technology (hardware/software) **may slightly improve efficiency**, it **won’t guarantee higher satisfaction** unless paired with **better training, communication, and service quality improvements**.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Request Category | Average of Resolution Time (Days) | ProjectedRT\_25% | Average of Satisfaction Rate | ProjectedSat |
| Hardware | 7.62539813 | 5.719048598 | 4.100996609 | 4.100996609 |
| Login Access | 0.313808105 | 0.235356079 | 4.094508958 | 4.094508958 |
| Software | 5.238732754 | 3.929049566 | 4.106336229 | 4.106336229 |
| System | 6.615609456 | 4.961707092 | 4.102302446 | 4.102302446 |
| Grand Total | 4.553149808 | 3.414862356 | 4.100648218 | 4.100648218 |

**As The Correation Between these 2 is almost 0 That is why there isn't much Difference between Average of Satisfaction Rate and ProjectedSat**

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

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Agent Name** | **Count of ID Ticket** | **Average of Resolution Time (Days)** | **StdDev of Resolution Time (Days)** | **Average of Satisfaction Rate** | **StdDev of Satisfaction Rate** |
| A. Trejo | 1949 | 5.32067727 | 4.944692917 | 3.592611596 | 1.454394602 |
| Alberto Casillas | 1974 | 4.298378926 | 4.074151444 | 4.415906788 | 0.944893316 |
| Alberto Gastelum | 1889 | 3.705664373 | 3.368940684 | 4.401270513 | 1.158479459 |
| Aldo Carrillo | 1966 | 4.554933876 | 4.37640953 | 3.783316378 | 1.478203431 |
| Alfonso Barraza | 1984 | 4.999495968 | 4.661891485 | 3.04233871 | 1.621284853 |
| Alfredo Barreras | 1920 | 4.286979167 | 4.182575987 | 3.667708333 | 1.536086321 |
| Armando Sierra | 1890 | 5.343915344 | 4.964055822 | 4.355026455 | 0.899025191 |
| Aurelio Tanori | 2027 | 4.514553527 | 4.401848344 | 4.407992107 | 0.911587825 |
| Barbara Grijalva | 2003 | 4.227159261 | 4.046288277 | 4.441337993 | 0.90725162 |
| Barraza Alberto | 1988 | 5.243963783 | 4.982035042 | 4.187625755 | 1.115164176 |
| Darwin E. | 1945 | 4.058097686 | 3.841673359 | 4.361953728 | 1.037661331 |
| Diana Rojo | 1927 | 3.636222107 | 3.365729774 | 4.596782564 | 0.869973338 |
| Eduardo Luna | 1920 | 4.4078125 | 4.164772161 | 4.147916667 | 1.229732336 |
| Elena Velez | 2021 | 5.381989114 | 4.911045562 | 3.615042058 | 1.452294654 |
| Enrique Montiel | 1938 | 4.643446852 | 4.279148383 | 4.444272446 | 0.870108623 |
| Estuardo Ocaño | 1935 | 5.524031008 | 5.056384895 | 3.97622739 | 1.263787756 |
| EstuardoTorres | 1942 | 4.901132853 | 4.686735616 | 4.085478888 | 1.217215195 |
| Eva Cardenas | 1943 | 4.720020587 | 4.347169682 | 4.411219763 | 0.876643787 |
| Flores Sierra | 1963 | 4.754457463 | 4.536163922 | 3.990830362 | 1.321012444 |
| Galindo Guadalupe | 1991 | 3.655951783 | 3.328069065 | 4.4716223 | 0.919401887 |
| Griselda Galindo | 1856 | 5.322198276 | 4.991060765 | 4.282327586 | 0.855002828 |
| Guadalupe Hernandez | 1915 | 4.55770235 | 4.362156406 | 4.377545692 | 0.923408135 |
| Guadalupe Torrico | 1987 | 3.66935078 | 3.351042845 | 4.364368395 | 1.094294754 |
| Guadalupe Villanueva | 1958 | 4.804392237 | 4.541304348 | 3.631256384 | 1.527095946 |
| Isela Leyva | 1968 | 3.651422764 | 3.319526431 | 4.222052846 | 1.256192168 |
| Javier D. | 1897 | 4.05640485 | 4.021498443 | 4.489720611 | 0.831236672 |
| Jesus Contreras | 2026 | 5.554787759 | 5.090607112 | 4.344521224 | 0.828362712 |
| Jesus Pacheco | 1931 | 4.595028483 | 4.368238655 | 3.660797514 | 1.520639075 |
| JesusGrajeda | 1968 | 3.596544715 | 3.357957754 | 4.473577236 | 0.903764374 |
| Leon Lourdes | 1961 | 3.705252422 | 3.386621028 | 4.341662417 | 1.113710057 |
| Lopez Moran. | 1956 | 4.778118609 | 4.610768197 | 3.63803681 | 1.521160222 |
| Lorena | 1966 | 5.511190234 | 5.050143163 | 3.628179044 | 1.448557918 |
| Luis Arguello | 1929 | 3.700362882 | 3.402830905 | 3.821150855 | 1.606085588 |
| Luis Torres | 1913 | 3.918452692 | 3.675321878 | 4.198118139 | 1.208822438 |
| Marisol Piedrahita | 1960 | 3.834183673 | 3.553938615 | 4.436734694 | 0.96549852 |
| Mata Lucero | 1969 | 5.44591163 | 5.091265116 | 4.340274251 | 0.825783765 |
| Melinda | 2007 | 4.369207773 | 4.188445927 | 4.399103139 | 0.92309419 |
| Miller Gaviria | 1892 | 4.731501057 | 4.387111703 | 3.991014799 | 1.327982062 |
| Nurio Zepeda | 1946 | 5.409558068 | 5.137421668 | 3.612024666 | 1.462834981 |
| Orci Carlos | 1926 | 4.317757009 | 4.152641638 | 3.665109034 | 1.560052501 |
| Parra Luna | 1963 | 4.867040245 | 4.581257384 | 3.847682119 | 1.436288284 |
| Ramon Macias | 1949 | 5.451513597 | 5.074530154 | 4.204720369 | 0.981166744 |
| Reyna Santacruz | 1897 | 3.846072746 | 3.483312633 | 3.913020559 | 1.488466275 |
| Rosa Olguin | 1950 | 5.319487179 | 4.972575353 | 4.320512821 | 0.900566918 |
| Sandra Lujan | 1906 | 5.204616999 | 4.907340871 | 3.601259182 | 1.494865574 |
| Segura Garcia | 1931 | 3.716727084 | 3.554173619 | 4.461418954 | 0.93461796 |
| Silvia Morales | 1974 | 4.886524823 | 4.653344451 | 4.123100304 | 1.226313673 |
| Velasquez Jose | 1949 | 4.523345305 | 4.435031107 | 3.690097486 | 1.521714639 |
| Willyberto Gonzales | 2000 | 4.259 | 4.241215976 | 4.376 | 0.952931288 |
| Yomaira Agudelo | 1933 | 3.824624935 | 3.458085901 | 4.170201759 | 1.252121103 |
| **Grand Total** | **97498** | **4.553149808** | **4.365517857** | **4.100648218** | **1.257347969** |

**IT Agent Performance Overview:**

**Average Resolution Time:** Across all agents, the average resolution time is **~4.55 days**, with some agents taking significantly longer (e.g., Jesus Contreras ~5.55 days, Lorena ~5.51 days).

**Average Satisfaction Rate:** Overall satisfaction is **~4.10**, with top-performing agents reaching **>4.4** (e.g., Diana Rojo, Barbara Grijalva, Marisol Piedrahita).

**Consistency:** Standard deviations show variability in performance — some agents are highly inconsistent in resolution time or satisfaction (e.g., Nurio Zepeda, Lorena), while others are more stable (e.g., Marisol Piedrahita, Mata Lucero).

**Ticket Volume:** Most agents handle a similar volume (~1900–2000 tickets), suggesting workload is relatively balanced.

**Insights for Improvement:**

**Training Opportunities:** Agents with high resolution times or low satisfaction (e.g., Alfonso Barraza, Lorena) may benefit from targeted coaching.

**Process & Tech Support:** Bottlenecks in Hardware or System requests indicate that technology upgrades or process optimization could improve efficiency across the team.

**Workload Management:** Some agents with consistently high resolution times may require workload redistribution or mentoring.

**No Immediate Need to Fire:** Most underperformers could improve with training, support, and process enhancements; termination should only be considered if poor performance persists after interventions.

**Key Takeaway:**  
  
Performance varies across agents, but with **training, better processes, and tech support**, the team can improve efficiency and satisfaction without immediate terminations.

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

|  |  |
| --- | --- |
| Age | Average of Resolution Time (Days) |
| 29-32 | 4.429076353 |
| 33-36 | 5.00876831 |
| 37-40 | 4.700934579 |
| 41-44 | 4.507023411 |
| 45-48 | 4.811861521 |
| 49-53 | 4.111645196 |
| **Grand Total** | **4.553149808** |

|  |  |
| --- | --- |
| Age | Average of Satisfaction Rate |
| 29-32 | 4.209981689 |
| 33-36 | 3.936558696 |
| 37-40 | 4.227300009 |
| 41-44 | 3.91782866 |
| 45-48 | 4.076503973 |
| 49-53 | 4.19835929 |
| **Grand Total** | **4.100648218** |

|  |  |
| --- | --- |
| Age | Count of ID Ticket |
| 29-32 | 23483 |
| 33-36 | 9694 |
| 37-40 | 11663 |
| 41-44 | 19435 |
| 45-48 | 17620 |
| 49-53 | 15603 |
| **Grand Total** | **97498** |

Employees aged **33–36** have the **highest average resolution time (5.01 days)** and **lowest satisfaction rate (3.94)**, suggesting potential training or process support is needed.  
The **37–40 age group** performs best with **highest satisfaction (4.23)** and moderate resolution time (4.70 days).  
**Younger agents (29–32)** handle the **largest ticket volume (23,483)** efficiently with **low resolution time (4.43 days)** and good satisfaction (4.21).  
**Senior agents (49–53)** also maintain **high satisfaction (4.20)** with the **lowest resolution time (4.11 days)**, indicating experience improves efficiency.  
Overall, **age and experience positively impact performance**, with mid-aged agents (33–36) showing the most need for performance improvement initiatives.

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

|  |  |  |
| --- | --- | --- |
| Fecha | Average of Satisfaction Rate | Count of ID Ticket |
| 2016 |  |  |
| Jan | 3.960538117 | 1115 |
| Feb | 3.934659091 | 1056 |
| Mar | 3.949321267 | 1105 |
| Apr | 4.012333966 | 1054 |
| May | 3.93362069 | 1160 |
| Jun | 3.955280685 | 1051 |
| Jul | 3.950953678 | 1101 |
| Aug | 3.999082569 | 1090 |
| Sep | 4.004712535 | 1061 |
| Oct | 3.959558824 | 1088 |
| Nov | 4.043021033 | 1046 |
| Dec | 4.056939502 | 1124 |
| 2017 |  |  |
| Jan | 4.143111111 | 1125 |
| Feb | 4.020851434 | 1151 |
| Mar | 4.036632892 | 1283 |
| Apr | 4.053012048 | 1245 |
| May | 4.028996283 | 1345 |
| Jun | 4.102090032 | 1244 |
| Jul | 4.081914031 | 1233 |
| Aug | 4.051628276 | 1259 |
| Sep | 4.065306122 | 1225 |
| Oct | 4.098084291 | 1305 |
| Nov | 4.066773934 | 1243 |
| Dec | 4.07557677 | 1257 |
| 2018 |  |  |
| Jan | 4.226532196 | 1289 |
| Feb | 4.057067021 | 1507 |
| Mar | 4.114965986 | 1470 |
| Apr | 4.100184388 | 1627 |
| May | 4.056866304 | 1653 |
| Jun | 4.060990338 | 1656 |
| Jul | 4.079012346 | 1620 |
| Aug | 4.089275015 | 1669 |
| Sep | 4.094627595 | 1638 |
| Oct | 4.056024096 | 1660 |
| Nov | 4.103321033 | 1626 |
| Dec | 4.092917479 | 1539 |
| 2019 |  |  |
| Jan | 4.20565046 | 1522 |
| Feb | 4.078465063 | 1746 |
| Mar | 4.121343445 | 1846 |
| Apr | 4.17709637 | 1598 |
| May | 4.169550173 | 1734 |
| Jun | 4.084065934 | 1820 |
| Jul | 4.116180371 | 1885 |
| Aug | 4.139632546 | 1905 |
| Sep | 4.123922414 | 1856 |
| Oct | 4.1024 | 1875 |
| Nov | 4.098853086 | 1831 |
| Dec | 4.073717949 | 1872 |
| 2020 |  |  |
| Jan | 4.171611136 | 2191 |
| Feb | 4.159360918 | 2441 |
| Mar | 4.087955626 | 2524 |
| Apr | 4.156651471 | 2413 |
| May | 4.246298789 | 2229 |
| Jun | 4.176793249 | 2370 |
| Jul | 4.272075303 | 2231 |
| Aug | 4.139516758 | 2566 |
| Sep | 4.152111521 | 2439 |
| Oct | 4.125438255 | 2567 |
| Nov | 4.11722488 | 2508 |
| Dec | 4.155615178 | 2609 |
| **Grand Total** | **4.100648218** | **97498** |

**Ticket Volume Trends:**

Steady growth from **2016 (~1,100/month)** to **2020 (~2,500+/month)**, showing a **consistent increase in workload**.

**Peak periods: Mar–Oct 2020 (especially Aug–Dec 2020, crossing 2,500 tickets/month).**

**Stable/low periods: Early years (2016–2017) with volumes near 1,000–1,200 tickets per month.**

**Satisfaction Trends:**

Gradual improvement from **~3.95 (2016)** to **~4.27 (Jul 2020)**.

Satisfaction remained **stable around 4.0–4.2** despite rising ticket loads — showing **good service resilience**.

**Highest satisfaction: May–Jul 2020 (4.24–4.27).**

**Slight dips: Early months of each year (Feb–Mar), likely due to increased workloads or staff transition periods.**

**Insight:  
Ticket volumes peaked sharply in 2020, but satisfaction rates remained stable or even improved, suggesting that process efficiency and agent performance improved over time.  
Peak months: Aug–Dec 2020  
Stable months: Jan–Apr 2017–2018**

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

**Key Metrics for Final Dashboard – IT Call Center Performance**

To provide a **comprehensive view** and support **investment decisions**, include the following metrics:

**Performance Metrics:**

**Average Resolution Time (Days):** Measures efficiency of issue handling.

**Average Satisfaction Rate:** Captures service quality and customer sentiment.

**Ticket Volume (Monthly/Weekly):** Shows workload trends and peak periods.

**Tickets per Agent per Day:** Evaluates workload distribution and productivity.

**Agent-Level Metrics:**

**Agent-wise Satisfaction & Resolution Time:** Identify top/bottom performers.

**StdDev of Resolution Time & Satisfaction:** Highlights consistency and outliers.

**Operational Insights:**

**Trend Analysis (Year & Month):** Detect seasonal or yearly performance patterns.

**Correlation between Resolution Time & Satisfaction:** Assess if faster resolutions improve satisfaction.

**Ticket Category Distribution:** Understand which issue types drive most workload.

**Investment Guidance Metrics:**

**Agent Utilization Rate:** Supports decision on hiring or automation.

**Software Performance (Ticket Backlog, Escalation Rate):** Identify need for system upgrades.