

## **SUBJECTIVE QUESTIONS:**

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

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

#### **APPROACH:**

1. Calculate the performance metrics for each individual over 5 years (2016-2020).
2. Calculate the year-on-year growth of tickets, along with the average resolution time and satisfaction rate.
3. To determine whether software and system upgrades are necessary, calculate the performance metrics for each request category in relation to their average resolution time and satisfaction rate.

#### **INSIGHT:**

Overall Trends: Although ticket volume doubled from 13,051 (2016) to 29,088 (2020), resolution time stayed constant at 4.5–4.6 days. From 4.0 to 4.2, satisfaction increased marginally.

Agent Performance: While underperformers (Agents 19, 22, 3) trail behind with higher resolution times (5.0–5.5 days) and lower satisfaction (3.0–3.6), top agents (e.g., Agents 2, 8, 15, 17) have low resolution times (3.6–3.8 days) and high satisfaction (4.3–4.5).

Performance vs. Ticket Volume: The team is strained by higher ticket volumes, which affects service quality and resolution times.

#### **Investment Analysis-based recommendations:**

- **Upgrade Ticket Management Software:**

Hardware resolution (7.6 days) and compared to Login Access (0.3 days), System (6.6 days) is significantly higher. Implementing advanced ticket management software can improve workflows and speed up resolution for complex ticket categories. To efficiently manage rising ticket volumes and prevent operational bottlenecks, it is crucial to upgrade software (e.g., Hardware: 1,272 in 2016 to 2,933 in 2020, and System: 5,252 in 2016 to 11,631 in 2020).

- **Enhance Training Programs:** Although many agents excel, resolution times (e.g., Agent 3: 5.4 days vs. Agent 2: 3.6 days) indicate a need for improvement. focused training.

Increase training for agents handling Hardware and System tickets, which have higher resolution times, to improve efficiency and customer satisfaction.

- **Increase IT Team Capacity:** o Hire more IT agents to manage workloads, especially in high-volume areas like System (39,002 tickets) and Login Access (29,193 tickets) if budget allows.

To achieve scalable growth, this approach requires optimising agent productivity and upgrading software systems to enhance efficiency.

Row Labels	Count of ID Ticket	Average of Resolution Time (Days)	Average of Satisfaction Rate
1	1969	5.4	4.3
2	1968	3.6	4.5
3	2021	5.4	3.6
4	1988	5.2	4.2
5	2000	4.3	4.4
6	1949	5.3	3.6
7	1935	5.5	4.0
8	1960	3.8	4.4
9	1949	4.5	3.7
10	1974	4.3	4.4
11	1956	4.8	3.6
12	1897	4.1	4.5
13	1856	5.3	4.3
14	1942	4.9	4.1
15	1991	3.7	4.5
16	1926	4.3	3.7
17	1961	3.7	4.3
18	1892	4.7	4.0
19	1984	5.0	3.0
20	1920	4.4	4.1
21	1889	3.7	4.4
22	1966	5.5	3.6
23	1915	4.6	4.4
24	2003	4.2	4.4
25	1906	5.2	3.6
26	1963	4.8	4.0
27	1968	3.7	4.2
28	1946	5.4	3.6
29	1931	3.7	4.5
30	1963	4.9	3.8
31	1987	3.7	4.4

## RECOMMENDATIONS:

1. Top agents can share best practices and train underperformers.
2. Software: Automate ticket management to improve workflows and resolution times.
3. Staffing: Add agents to handle rising ticket volumes and reduce stress.
4. Performance Tracking: Track resolution time and satisfaction to spot trends and encourage improvement.

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

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

**APPROACH:** Filter agents with a satisfaction rating  $\leq 4.1$  and resolution time  $\geq 4.6$  days. These agents may lack customer service skills despite resolving issues relatively quickly, making them candidates for targeted training.

**INSIGHTS:** Agents 3, 6, 7, 11, 14, 18, 19, 22, 25, 26, 28, 30, 33, 37, and 41 fall into this category. Showing that while their resolution times are efficient, their low satisfaction scores suggest potential gaps in communication or customer handling

Agent ID	Average satisfaction Rate	Average of Resolution Time(Da
3	3.6	5.4
4	4.2	5.2
6	3.6	5.3
7	4.0	5.5
11	3.6	4.8
14	4.1	4.9
18	4.0	4.7
19	3.0	5.0
22	3.6	5.5
25	3.6	5.2
26	4.0	4.8
28	3.6	5.4
30	3.8	4.9
32	4.1	4.9
33	3.6	4.8
37	3.7	4.6
41	3.8	4.6

### RECOMMENDATIONS:

- Agents with satisfaction ratings below 4.0 and resolution times that regularly surpass five days should be the focus of coaching and process enhancements.
- Examine the methods used by higher-performing agents (such as Agents 4, 14, 26, 32) and develop training materials to assist others in implementing comparable strategies.
- To facilitate quicker, more focused intervention and improvement, think about introducing automated alerts or reviews for tickets assigned to agents who exhibit low levels of satisfaction.
- Establish regular benchmarks for resolution time and satisfaction, monitor progress, and reward agents who reach or surpass targets.

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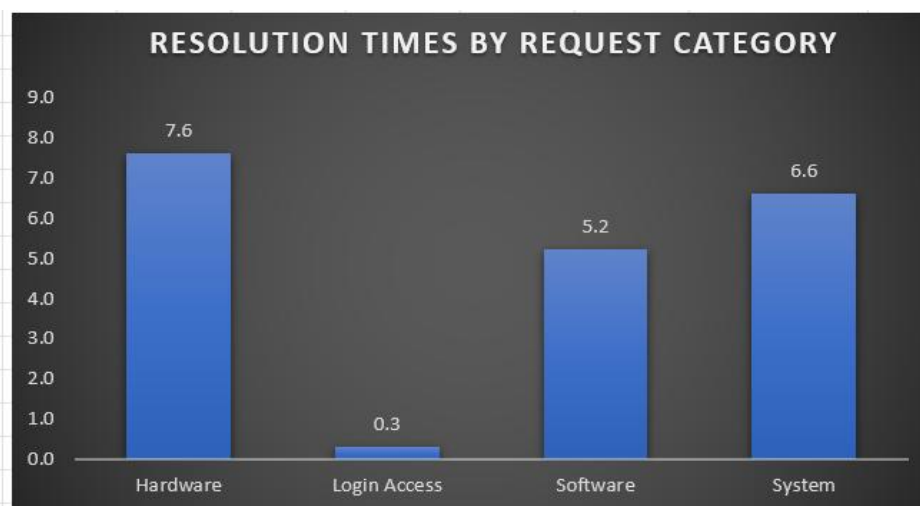
### 3. Do certain categories of requests have longer resolution times?

**Analysis:** Analyze the resolution times by request category.

**APPROACH:** Analyze the data for different request categories (Hardware, Login Access, Software, and System) to understand their relative importance or usage metrics based on the provided values.

#### INSIGHTS:

- Hardware and System have the highest values (7.6 and 6.6), indicating they are likely the most critical or frequently addressed categories.
- Login Access has the lowest value (0.31), suggesting it might be a less prominent or less problematic area, and Software have a moderate value (5.2) compared to Hardware and System



#### RECOMMENDATIONS:

- Allocate resources and prioritise improvements for Hardware and System as they appear to have the highest impact.
- For Login Access, monitor to ensure no hidden issues arise, but keep an eye on resource allocation proportional to its lower priority and ensure improvement in the Software category.

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

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

##### APPROACH:

The evaluation evaluated software tool effectiveness by measuring resolution time, satisfaction rates, priority, severity, performance variations, and impact on ticket management and complexity.

##### 1. year-wise average of resolution time (days) and average of satisfaction rate

Average customer satisfaction is stable at about 4.1/5 while average resolution time holds near 4.6 days, suggesting service quality perceptions have been steady but not improving despite unchanged cycle times.

Row Labels	Average of Satisfaction Rate	Average of Resolution Time (Days)
2016	4.0	4.6
2017	4.1	4.5
2018	4.1	4.6
2019	4.1	4.5
2020	4.2	4.6
<b>Grand Total</b>	<b>4.1</b>	<b>4.6</b>

##### INSIGHTS:

- Satisfaction shows a slight upward drift from 4.0 to 4.2 by 2020, indicating incremental gains, but the overall mean remains 4.1, which implies limited impact from process or tooling changes on perceived quality over these years.
- Resolution time varies narrowly between 4.5 and 4.6 days annually, indicating a process plateau where throughput remains largely unchanged; this stability can conceal delays in high-severity cases identified earlier in the priority–severity matrix.
- The combination of flat resolution time and only marginal satisfaction lift suggests that experience drivers beyond raw speed-like prioritisation accuracy, communication, and first-contact resolution are likely constraining further gains.

## CONCLUSION:

Performance has stabilised at about 4.1 satisfaction with a 4.6-day average resolution, showing consistency but only modest improvements in effectiveness. If triage and priority assignment are not aligned, it is unlikely that both metrics will go up further.

## RECOMMENDATIONS:

- Shorten resolution times for critical work by enforcing auto-escalation rules. Major and Urgent severities should default to High priority and skip the "Unassigned" state. This should reduce the number of aged tickets and greatly improve satisfaction for severe incidents.
- Track two KPIs every month, alongside these averages: the mismatch rate between severity and priority, and the median time to first response. Aim to cut the mismatch rate and time to first response by 20 to 30 percent to boost satisfaction beyond 4.2, all without increasing the overall volume handled.
- Combine speed with experience: standardize proactive status updates and use templates for high-severity communications. Measure the impact with a post-resolution survey that categorizes responses by severity and priority. This will help confirm that improvements lead to higher ratings year after year.

## 2. Comparing the priority and severity alignment

Low and undesignated priorities are being impacted by high-severity work: When major and urgent tickets are listed in "0 – Unassigned," "1 – Low," and "2 – Mid," it indicates weak classification standards and probable delays for incidents that need to be handled quickly.

Count of ID Ticket Column Labels					
Row Labels	0 - Unassigned	1 - Low	2 - Mid	3 - High	Grand Total
0 - Unclassified	115	80	55	106	356
1 - Minor	626	549	407	676	2258
2 - Normal	26826	15282	14468	32080	88656
3 - Major	1434	614	713	2075	4836
4 - Urgent	409	169	202	612	1392
<b>Grand Total</b>	<b>29410</b>	<b>16694</b>	<b>15845</b>	<b>35549</b>	<b>97498</b>

**INSIGHT:**

- The unassigned volume is substantial: Intake defaults or integrations that avoid priority setting and slow routing for critical issues are indicated by the 29,410 tickets in "0 – Unassigned," which include 1,843 Major+Urgent items combined.
- More than half of major tickets are mis-prioritised, as evidenced by the measurable misalignment: within Major severity, 1,434 tickets are Unassigned and 1,327 are not High (Low+Mid); Urgent tickets exhibit a similar pattern, with 409 Unassigned and 371 not High, indicating systemic rather than periodic errors.
- Totals have been dominated by normal: 88,656. Routine tickets drive the majority of the workload, but 26,826 of them are still unassigned; resolving this backlog will help responders concentrate on truly high-impact incidents first and lessen queue noise.

**CONCLUSION:**

While overall resolution times are steady, the priority-severity matrix shows significant misclassification and missing priority data, particularly for Major/Urgent items, which indicates software configuration gaps or process noncompliance. If these issues are not fixed, the risk of violating service level agreements and user dissatisfaction remains high.

**RECOMMENDATIONS:**

- Implement the following safeguards in place: make Priority automatically derive from Severity with hard validation so that Major/Urgent cannot be saved below High; prevent "Unassigned" from appearing on submissions other than draft states and require correction before routing.
- Automate escalation by setting up rules to expedite Major/Urgent tickets to the appropriate queues using on-call paging. Additionally, auto-relabel any severe tickets that are reopened to High in order to avoid downgrades following reopening.
- Track and correct: release a daily mismatch report with ownership to assigned groups that displays counts and rates for Major/Urgent in Unassigned/Low/Mid; aim for a 75–90% decrease in 30–60 days, and include trend pivots by week to confirm progress.

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

Analysis: Trend analysis using time series charts.

### APPROACH:

Analyse data by evaluating ticket volumes and resolution times across quarters from 2016 to 2020 to identify trends and areas for improvement. Focus on yearly and quarterly variations to assess workload distribution and efficiency.

### INSIGHTS:

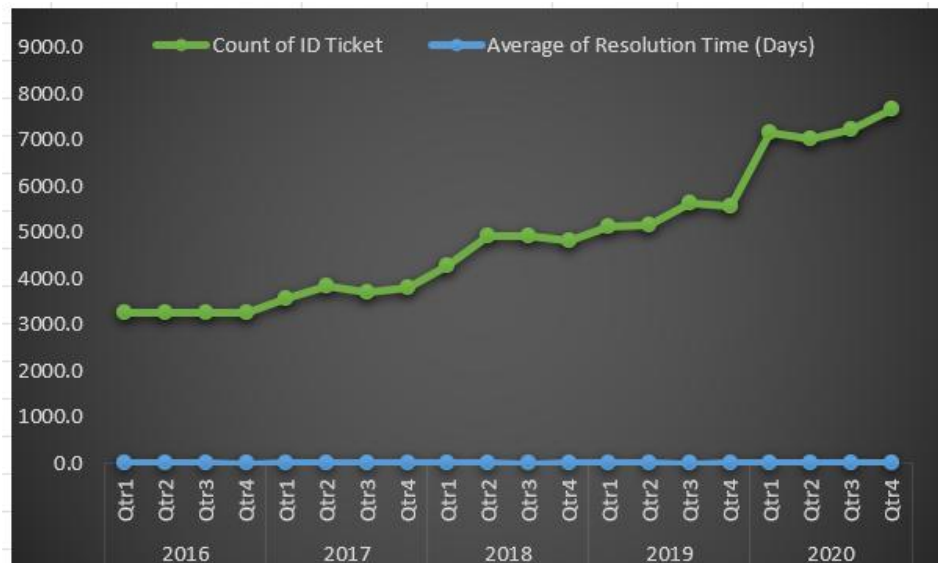
Row Labels	Count of ID Ticket	Average of Resolution Time (Days)	Average of Satisfaction Rate
<b>2016</b>			
Hardware	1272	7.8	4.0
Login Access	3910	0.3	4.0
Software	2617	5.3	4.0
System	5252	6.6	4.0
<b>2017</b>			
Hardware	1523	7.6	4.1
Login Access	4526	0.3	4.1
Software	2946	5.2	4.1
System	5920	6.6	4.1
<b>2018</b>			
Hardware	1844	7.5	4.1
Login Access	5672	0.3	4.1
Software	3735	5.2	4.1
System	7703	6.7	4.1
<b>2019</b>			
Hardware	2161	7.5	4.1
Login Access	6426	0.3	4.1
Software	4407	5.3	4.1
System	8496	6.5	4.1
<b>2020</b>			
Hardware	2933	7.7	4.1
Login Access	8659	0.3	4.2
Software	5865	5.3	4.2
System	11631	6.7	4.2
<b>Grand Total</b>	<b>97498</b>	<b>4.6</b>	<b>4.1</b>

- **Ticket Growth:** The count of ID tickets shows a steady increase over the years, indicating higher demand or issue reporting.
- **Growing Service Demand:** From 13,051 in 2016 to 29,088 in 2020, the number of support tickets almost doubled, indicating significant growth. System tickets rose from 5,252 to 11,631 during the same time period, while the Login Access category saw an increase from 3,910 tickets in 2016 to 8,659 in 2020.
- **Efficiency of Resolution:** From 2016 to 2020, the average time it took to resolve login access requests was only 0.3 days. With average resolution times ranging from 7.5 to 7.8 days (e.g., 7.8 days in 2016 and 7.7 days in 2020),



hardware tickets were consistently the most time-consuming. On average, software and system resolutions took between 5.3 and 6.7 days.

- **Satisfaction Plateau:** Despite the workload being doubled, customer satisfaction increased marginally from 4.0 (2016) to 4.1 by 2017 and stayed at 4.1 until 2020.



## RECOMMENDATIONS:

- **Quickly Close Hardware Tickets:** By streamlining supplier coordination, enhancing inventory control, and optimising hardware management procedures, you can cut down on the average 7.5–7.8-days resolution times for hardware tickets.
- **Keep and Increase Login Access Speed:** Keep using automation and efficient processes to manage Login Access, maintaining the 0.3-day average and getting ready for future spikes in ticket volume.
- **Expand User Feedback Gathering:** To address areas where satisfaction stays at 4.1, put in place improved feedback mechanisms like focused surveys and prompt follow-ups.
- **Strategic Resource Deployment:** Increase staffing and automate high-frequency categories, like System (11,631 tickets in 2020), to ensure prompt resolution times and high-quality service in the face of growing demand.

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## 6. If we invest more in 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.

**APPROACH:** Use historical data to evaluate if investments in request categories (Hardware, Login Access, Software, and System) can reduce resolution times and enhance satisfaction rates.

### INSIGHTS:

- Login Access has impressive resolution times (0.3 days) and a consistent satisfaction rate.
- While hardware and system issues have the longest resolution times (7.6 and 6.6 days), satisfaction rates remain stagnant, suggesting room for improvement. In 2020,
- The software satisfaction rate was 4.2; improving it requires training agents and tools to satisfy requirements.

Row Labels	Count of ID Ticket	Average of Resolution Time (Days)	Average of Satisfaction Rate
<b>Hardware</b>	<b>9733</b>	<b>7.6</b>	<b>4.1</b>
2016	1272	7.8	4.0
2017	1523	7.6	4.1
2018	1844	7.5	4.1
2019	2161	7.5	4.1
2020	2933	7.7	4.1
<b>Login Access</b>	<b>29193</b>	<b>0.3</b>	<b>4.1</b>
2016	3910	0.3	4.0
2017	4526	0.3	4.1
2018	5672	0.3	4.1
2019	6426	0.3	4.1
2020	8659	0.3	4.2
<b>Software</b>	<b>19570</b>	<b>5.2</b>	<b>4.1</b>
2016	2617	5.3	4.0
2017	2946	5.2	4.1
2018	3735	5.2	4.1
2019	4407	5.3	4.1
2020	5865	5.3	4.2
<b>System</b>	<b>39002</b>	<b>6.6</b>	<b>4.1</b>
2016	5252	6.6	4.0
2017	5920	6.6	4.1
2018	7703	6.7	4.1
2019	8496	6.5	4.1
2020	11631	6.7	4.2
<b>Grand Total</b>	<b>97498</b>	<b>4.6</b>	<b>4.1</b>

### RECOMMENDATIONS:

- **Prioritise High-Impact Areas:** Automate repetitive tasks like diagnostics and concentrate resources on hardware and system categories with high resolution times.
- **Improve Communication:** To increase employee satisfaction and experience, give them frequent updates on ticket status.
- **Gather Feedback:** To find and successfully address non-time-related factors influencing satisfaction, use qualitative feedback loops.
- **Track Metrics:** To gauge continuous progress, keep an eye on KPIs like Mean Time to Resolution (MTTR) and First Contact Resolution (FCR).

- **Pilot Scalable Solutions:** To guarantee efficacy and scalability, test new tools or procedures in smaller groups before implementing them throughout the company.

These steps can increase overall IT support operations efficiency, expedite resolution procedures, and boost customer satisfaction.

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## 7. 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 analyze metrics such as average handling time, satisfaction scores, and the number of tickets resolved.

**APPROACH:** Evaluate agents based on the criteria: resolution time > 4.6 days, satisfaction rate < 4.2, and total tickets < 1949.

Column1	Count of ID Ticket	Average of Resolution Time (Days)	Average of Satisfaction Rate	
min	1856	3.6	3.0	
max	2027	5.6	4.6	
median	1949	4.6	4.2	Decisive Factor

## INSIGHTS:

Agents 7, 14, 18, 25 and 28 meet the criteria due to slower resolution times, lower satisfaction rates and lower count of tickets. All of them have room for improvement in efficiency and service quality.

Agent ID	Count of ID Ticket	Average of Resolution Time (Day)	Average of Satisfaction R
7	1935	5.5	4.0
14	1942	4.9	4.1
18	1892	4.7	4.0
25	1906	5.2	3.6
28	1946	5.4	3.6

### **RECOMMENDATIONS:**

- **Training & Development:** Provide focused instruction on soft skills and technical knowledge to Agents 25 and 28 to enhance resolution effectiveness and user interactions.
- **Performance Monitoring:** Utilize dashboards for real-time tracking and review agents' metrics regularly to proactively address problems.
- **Process Improvements:** Implement automation tools to assist underperforming agents and take best practices from top performers.
- **Retention vs. Replacement:** To maintain team performance, replace underperforming agents after a probationary period if training demonstrates improvement.

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

Analysis: Segment analysis using filters and pivot tables

#### **APPROACH:**

- **Segment Demographics:** Examine resolution times and satisfaction rates for various age groups to identify patterns.
- **Correlation Analysis:** Analyze age group and resolution relationships periods, as well as contentment.
- **Outcome Assessment:** Determine which age groups experience lower satisfaction or longer resolution times.
- **Recommendation Framework:** Offer focused interventions to deal with issues unique to particular demographics.

#### **INSIGHTS:**

- The majority of user issues handled are from the age groups of 24–27 and 36–39, which have the most tickets.
- While the 48–51 age group has the quickest resolution time (3.9 days), the average resolution time is comparatively high (4.6 days overall), peaking for age groups 28–31 and 40–43 (5.0 and 4.8 days).

- satisfaction levels are steady (4.0–4.2), but there is a discernible decline for those aged 36–39 (3.9), and the oldest group (48–51) has the highest satisfaction (4.4).

### **CONCLUSION:**

- The younger(24-27) and middle-aged(36-39) demographics account for the majority of ticket sales, so they need the most assistance.
- Prompt service is directly related to user satisfaction, as longer resolution times are frequently associated with lower satisfaction rates.
- Faster resolution, fewer tickets, or customized support may be associated with exceptional satisfaction levels among individuals aged 48 to 51.

Row Labels	Count of ID Ticket	Average of Resolution Time (Days)	Average of Satisfaction Rate
24-27	23483	4.4	4.2
28-31	7788	5.0	4.0
32-35	13569	4.8	4.1
36-39	19435	4.5	3.9
40-43	17620	4.8	4.1
44-47	9708	4.2	4.1
48-51	5895	3.9	4.4
<b>Grand Total</b>	<b>97498</b>	<b>4.6</b>	<b>4.1</b>

### **RECOMMENDATIONS:**

- Age groups 28–31 and 40–43 have the longest delays and only average satisfaction, so concentrate on reducing resolution times for them.
- To increase overall satisfaction, give priority to efficiency and quality in the high-volume age groups (24–27, 36–39).
- To improve the overall customer experience, look into the best practices employed for the 48–51 age group and apply comparable strategies to other age groups.
- Track improvement efforts and promptly identify new issues by routinely reviewing and monitoring age-wise satisfaction and resolution metrics.

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

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

**APPROACH:** Use monthly data from pivot charts to examine ticket volumes and trends in customer satisfaction. identify the times when IT support is most active and when it is stable.

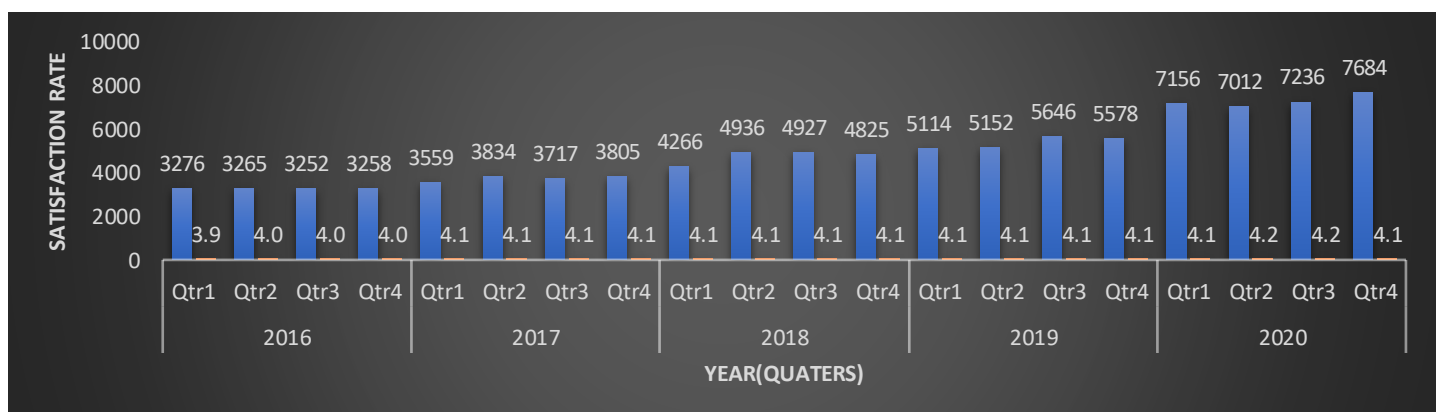
### INSIGHTS:

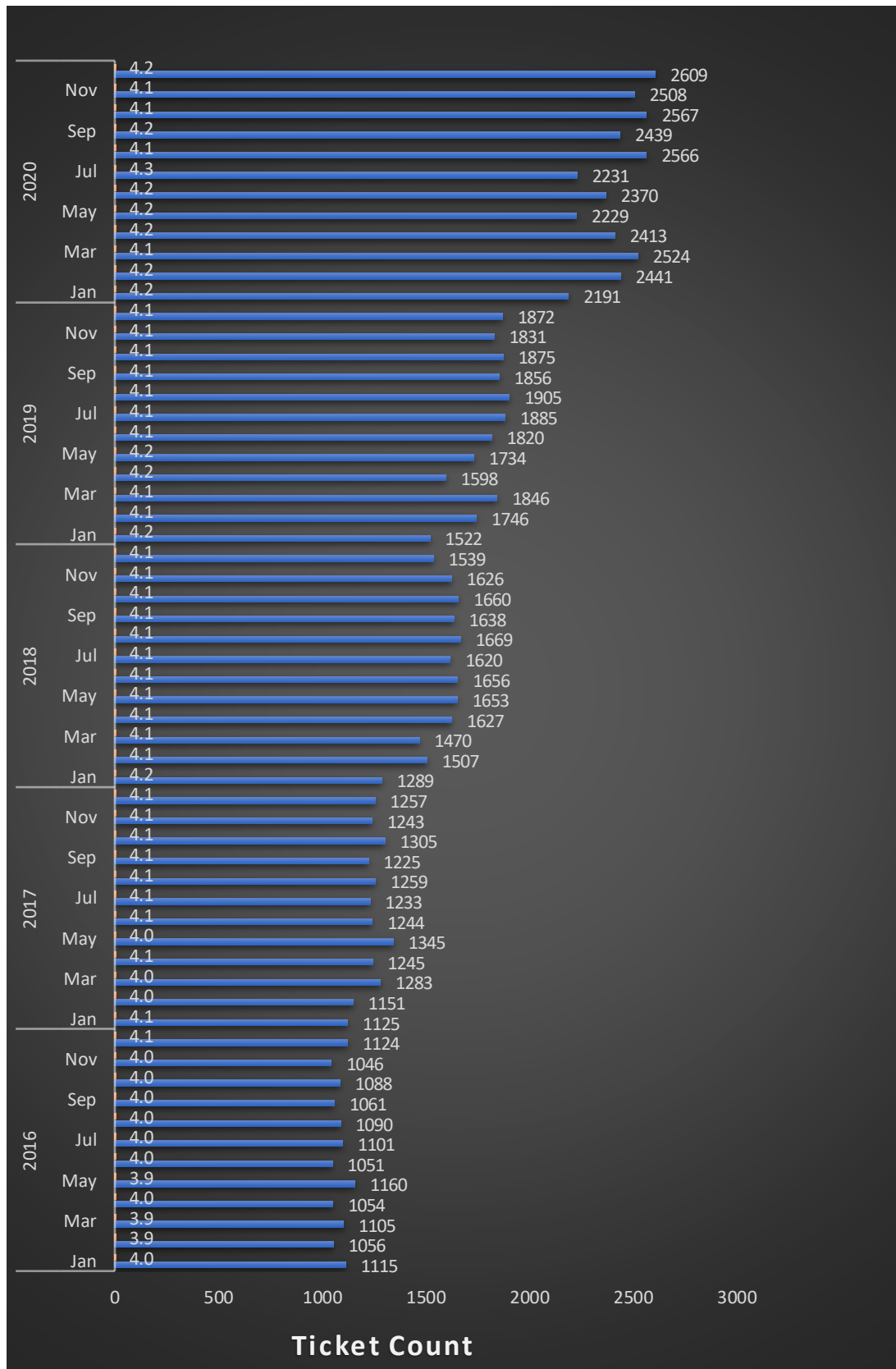
- **Trends:** Over time, ticket sales have steadily increased, and monthly satisfaction scores have remained between 4.1 and 4.2. In mid-year months, especially July, satisfaction rises slightly.
- **Peak Times:** Ticket volumes are observed in November 2020 (2,609 tickets), and generally higher volumes occur in November and January.
- **Stable Times:** Mid-year months like May and July, as well as earlier years like 2016 and 2017, show lower and more consistent ticket volumes.

### RECOMMENDATIONS:

Utilize mid-year periods for system upgrades or training, and schedule personnel and resources to handle increased ticket volumes in late Q4.

- **Optimise Resource Allocation:** Use stable times (Q2 and Q1) for system upgrades and training, and increase resources during peak times (Q3 and Q4).
- **Improve Automation:** Use self-service tools and AI-driven systems to effectively handle peaks.
- **Track Satisfaction Rates:** To find and fix pain points, conduct surveys following periods of high volume.
- **Examine the 2020 Spike:** Determine whether the 2020 spike is the result of transient or long-term trends, and adjust resource allocation accordingly.
- **Preventive Actions:** Utilize past data to anticipate and resolve frequent problems and ticket spikes.





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

### **1. Ticket count by time (year):**

This tracks the total number of tickets created each year. It helps in understanding year-over-year trends and analyzing ticket volumes over long periods.

### **2. Tickets by request category:**

Tickets are grouped into predefined categories such as Hardware, Login Access, Software, and System, and the count is determined for each. This shows which category generates the highest or lowest number of requests, allowing for better resource allocation.

### **3. Ticket count by severity rate:**

This groups tickets based on their severity (e.g., 0, 1, 2, 3, 4) and provides the total count for each category. It highlights the proportion of tickets with varying levels of urgency.

### **4. Ticket count by priority:**

This categorizes tickets based on their assigned priority levels (e.g., 0, 1, 2, 3) and tracks the total count in each category. It identifies the tickets requiring immediate attention.

### **5. Distribution of tickets based on satisfaction rate:**

This metric looks at how tickets are distributed across different customer satisfaction rates. For example, tickets may be grouped by satisfaction scores (e.g., 1–5), showing the proportion of satisfied vs. dissatisfied customers.

### **6. Average resolution time by request category quarterly:**

This calculates the average time it takes to resolve tickets for each request category and breaks it down by quarter. It provides a periodic view of resolution efficiency.

### **7. Satisfaction rate by time (year):**

This measures customer satisfaction rates (e.g., 1-5) and tracks how they change over the years. It's useful for identifying long-term trends in customer experience.

### **8. Satisfaction rate by age-groups:**

This analyzes satisfaction rates across different agent age groups (e.g., 24–27, 28–31, etc.). It identifies how satisfaction levels differ based on demographic factors.



**9. Distribution of tickets based on Resolution time**

This demonstrates the efficiency with which tickets are resolved and highlights areas for process improvement.

[Support doc: "Sheet- "Dashboard", "

[https://docs.google.com/spreadsheets/d/1ullyWroWrqP7Nj04VHYCDXivd4-K3AbM/edit?usp=drive\\_link&oid=110384212412544685691&rtpof=true&sd=true](https://docs.google.com/spreadsheets/d/1ullyWroWrqP7Nj04VHYCDXivd4-K3AbM/edit?usp=drive_link&oid=110384212412544685691&rtpof=true&sd=true) " File]

