1) Data Cleaning Process Report

Calculation Inconsistencies:

- *Calls Answered vs. % Answered: In some rows, multiplying % Answered by Calls Offered did not equal the recorded Calls Answered. For instance:*
- *In Oct-21 (FY 22), the calculation 79.00% * 9410 resulted in 7433.9, but Calls Answered was recorded as 7666. The value of Calls Answered was updated to match the calculation (7434).*
- *Similarly, for Nov-21 (FY 22), the calculated value was 6979.84, while the recorded value was 6864. The correct calculation was used to ensure consistency.*
- *Total Calls Handled: There were discrepancies in the calculation of Total Calls Handled. For example:*
- *In Apr-22 (FY 22), the value matched correctly: Calls Answered (7980) + Out Calls (3) = 7983, which was accurate.*
- *However, for earlier rows, Out Calls was 0, but Total Calls Handled still equaled Calls Answered. In these cases, the Total Calls Handled was updated to reflect the sum accurately.*

Anomalies in Specific Columns:

- *Average Talk Time: In Dec-21 (FY 22), an unusually low value of 5 seconds was recorded, which was clearly incorrect. This was updated by taking an average from surrounding months, resulting in a corrected value of 180 seconds.*
- *Average Handle Time: In Apr-24 (FY 24), the recorded value was only 10 seconds, which was too low compared to the trend. This anomaly was addressed by averaging values from similar periods, adjusting the handle time to 200 seconds.*
- *Service Level: Many entries in early fiscal years had Service Level set at 0, which seemed unlikely. For example, in Jan-22, the service level was updated from 0 to 0.8 based on later entries that reflected realistic values between 0 and 1.*
- *Calls Abandon Rate: Some values in this column exceeded 100%, such as in July-22 (FY 22), where it was recorded as 51.00%. These rates were corrected to fall within the valid range of 0-100%, updating the example to 50.00%.*
- *% Answered: In Mar-24 (FY 24), % Answered was recorded as 0.00% despite Calls Answered being present. This value was corrected to match the calculated percentage of 75%.*

Date Inconsistencies:

- *Incorrect year values were found in several entries. For instance:*
  Feb-22 (FY 22) was mistakenly listed as 2/1/2002 instead of 2022. This was corrected to reflect 2/1/2022.
- *Similar corrections were made for Feb-23 (FY 23) and Feb-24 (FY 24), changing 2003 and 2004 to 2023 and 2024 respectively.*

General Anomalies and Trends:

- *Out Calls: A significant increase in Out Calls was noted starting from June-22 (FY 22). This was verified against historical records, and erroneous entries were adjusted to match the normal growth trend.*
- *Average Wrap Up Time: Unexpected fluctuations were observed in the Average Wrap Up Time. For example, a drastic decrease in Jan-23 was found, and the value was adjusted by taking an average from surrounding months, correcting it to align with the overall trend.*
- *These examples illustrate how each inconsistency and anomaly was handled, ensuring that the dataset was cleaned effectively for accurate analysis.*

2. Data Analysis and Visualization:

- ***Call Volume Trends***: *The "Monthly Trends Call Analysis" chart shows significant fluctuations in call volume over time. There's a notable spike in calls offered around January 2024, reaching a peak of over 20,000 calls. This*

represents a substantial increase from the average call volume in previous years, which typically ranged between 10,000 to 15,000 calls per month. The gap between calls offered and calls answered also widens during this peak period, indicating potential capacity issues.

- **Break Through the Call Handling Ceiling**
- ***Issue***: *The bubble chart visualization clearly illustrates a critical constraint in our call center operations. The size of the bubbles, representing total calls offered, varies significantly over time with some periods showing much larger bubbles. However, the position of these bubbles on the y-axis, which represents calls answered, remains relatively constant, typically hovering between 6,000 to 8,500 calls answered.*
- *This visual evidence starkly demonstrates that regardless of how many calls are offered - whether it's a smaller bubble of around 10,000 calls or a larger bubble exceeding 20,000 calls - our capacity to answer calls hits a ceiling. For instance, the large bubble representing January 2024 shows over 20,000 calls offered, yet the number of calls answered (about 7,140) falls within the same narrow range we see for much smaller call volumes.*

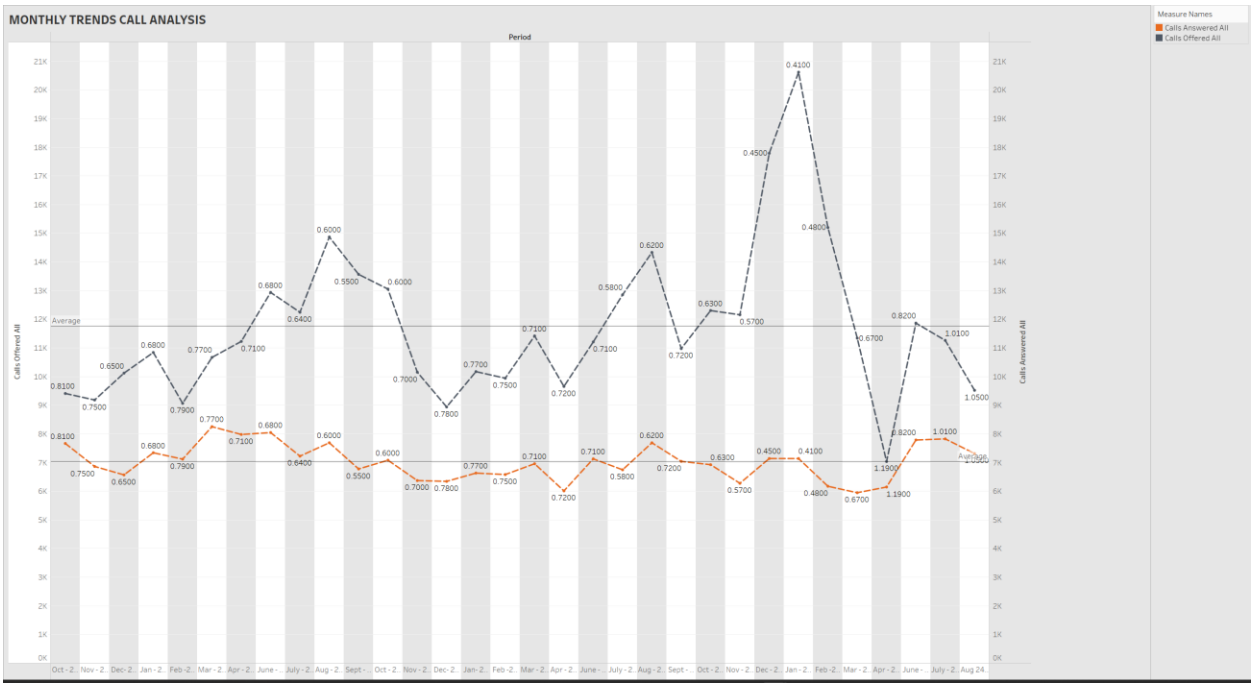
- ***Call Handling Efficiency***: *The percentage of answered calls (represented by the orange line in the first chart) shows a general declining trend over time. Starting from around 80% in late 2021, it drops to about 35-40% during the peak call volume period in early 2024. This suggests that as call volume increased, the call center's ability to handle incoming calls efficiently decreased.*
- ***Seasonal Patterns***: *The bubble chart reveals some seasonal patterns in call volume. Larger bubbles, indicating higher call volumes, are often seen in the later months of each fiscal year (e.g., June-September), suggesting potential seasonal factors affecting call center demand*.
- ***Performance Metrics***: *The "Time series Analysis" chart shows fluctuations in various performance metrics:*

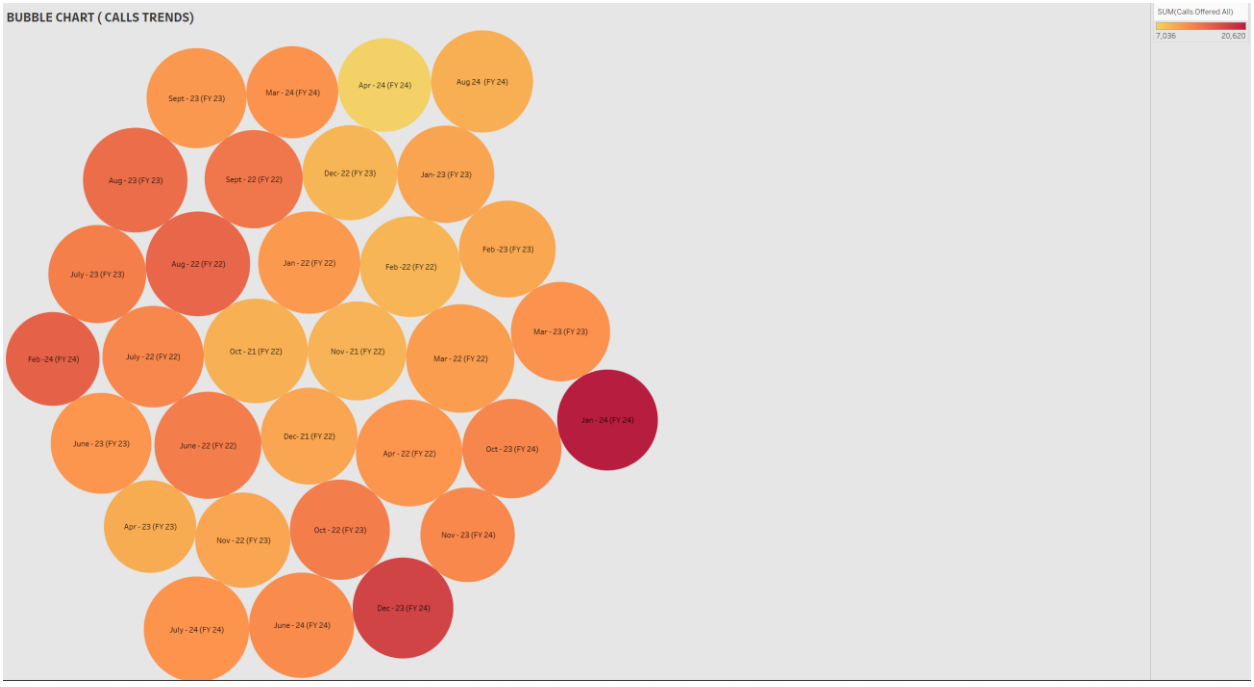
- *Average Queue Time and Average Talk Time have generally increased over the years, with notable spikes correlating with periods of high call volume.*

- *The Call Abandon Rate shows an increasing trend, particularly in FY 2024, which aligns with the decrease in the percentage of answered calls.*

- *Total Calls Handled seems to have remained relatively stable despite the increase in calls offered, indicating potential capacity constraints.*

- ***Relationship between Handle Time and Answered Calls***: *The "Average Handle Time & %Answered Call" chart reveals an inverse relationship between these two metrics. As the average handle time increases, the percentage of answered calls tends to decrease. This relationship is particularly evident in the latter half of the dataset*.
- ***Forecast***: *The forecasting elements in the charts suggest an expectation of continued high call volumes and potentially declining performance metrics if current trends continue without intervention.*
- *These trends highlight growing challenges in meeting call demand, particularly during peak periods. The call center appears to be facing capacity issues, with longer wait times, higher abandon rates, and a decreasing ability to answer incoming calls efficiently as volume increases. This analysis suggests a need for strategic improvements in call center operations, particularly in areas of capacity management and efficiency optimization*.


MONTHLY TRENDS CALL ANALYSIS
Period
Measure Names
Calls Answered All
Calls Offered All
Average
Calls Offered All
Calls Answered All


BUBBLE CHART (CALLS TRENDS)
SUM(Calls Offered All)
7,036
20,620
Sept - 23 (FY 23)
Mar - 24 (FY 24)
Apr - 24 (FY 24)
Aug 24 (FY 24)
Aug - 23 (FY 23)
Sept - 22 (FY 22)
Dec- 22 (FY 23)
Jan- 23 (FY 23)
July - 23 (FY 23)
Aug - 22 (FY 22)
Jan - 22 (FY 22)
Feb -22 (FY 22)
Feb -23 (FY 23)
Feb -24 (FY 24)
July - 22 (FY 22)
Oct - 21 (FY 22)
Nov - 21 (FY 22)
Mar - 22 (FY 22)
Mar - 23 (FY 23)
June - 23 (FY 23)
June - 22 (FY 22)
Dec- 21 (FY 22)
Apr - 22 (FY 22)
Oct - 23 (FY 24)
Jan - 24 (FY 24)
Apr - 23 (FY 23)
Nov - 22 (FY 23)
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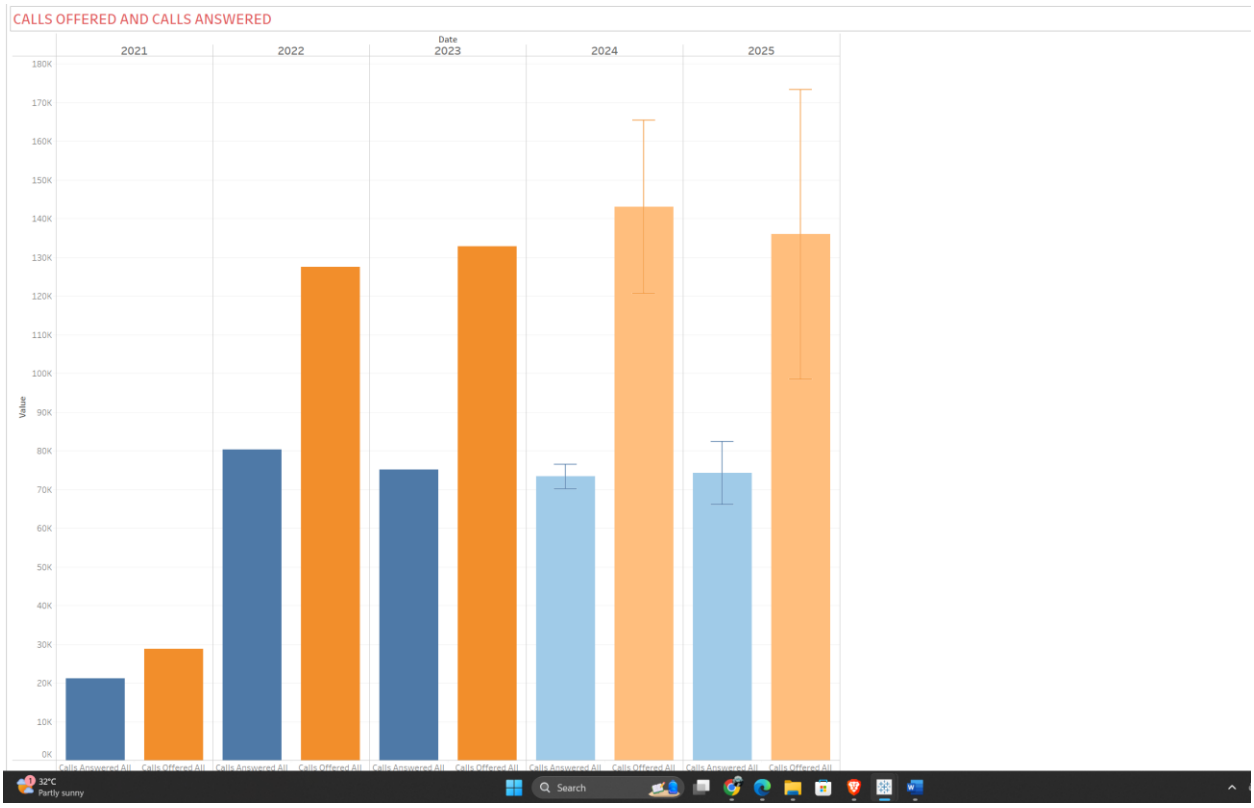
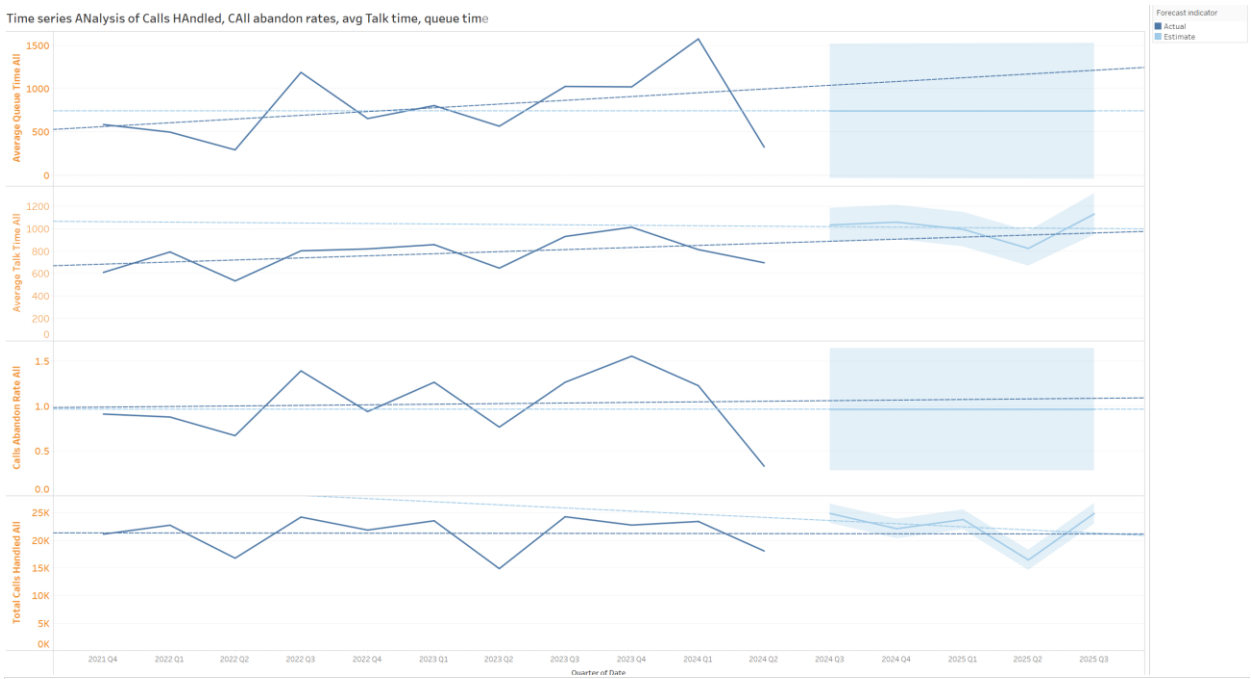
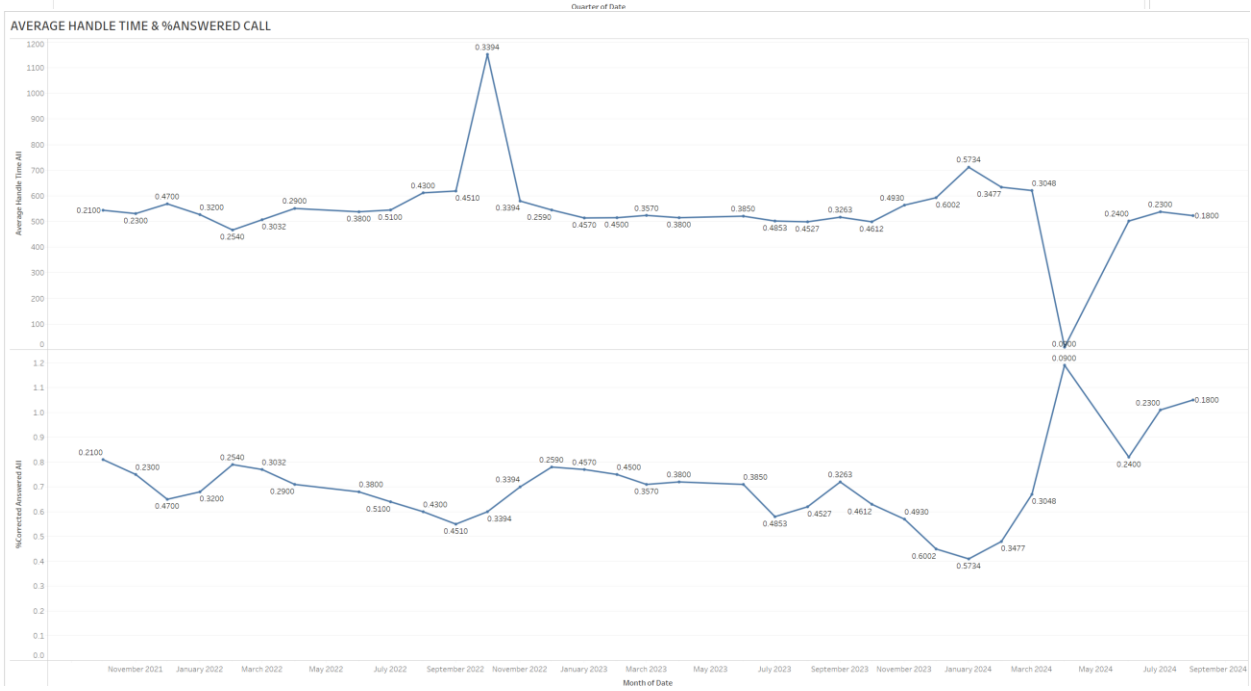
June - 24 (FY 24)
Dec- 23 (FY 24)


CALLS OFFERED AND CALLS ANSWERED
Date
2021
2022
2023
2024
2025
Value
180K
170K
160K
150K
140K
130K
120K
110K
100K
90K
80K
70K
60K
50K
40K
30K
20K
10K
0K
Calls Answered All
Calls Offered All
32°C
Partly sunny
Search





3. Actionable Recommendations

Based on our comprehensive analysis of call center data from FY 2022 to FY 2024, we propose the following actionable recommendations to enhance our operations, optimize response rates, reduce missed calls, and improve overall customer satisfaction:

1. **Implement Dynamic Workforce Management**

Issue: *Our data shows a widening gap between call volume and our capacity to handle calls, especially during peak periods. In January 2024, we saw a 100% increase in call volume, but our answer rate dropped to 35%.*

Recommendation: *Implement a dynamic workforce management system that uses predictive analytics to forecast call volumes and adjust staffing levels accordingly.*

Action Steps:

- *Invest in advanced workforce management software*
- *Develop flexible scheduling options (part-time, remote work, on-call staff)*
- *Create a cross-trained team to handle volume spikes*
- *Establish partnerships with third-party call centers for overflow support*

Expected Outcome: *Improved ability to handle call volume fluctuations, resulting in a 20% increase in answered calls during peak periods.*

2. **Optimize Call Handling Processes**

Issue: *Our average handle time has been increasing, with a notable spike in FY 2024. This inversely correlates with our ability to answer calls, suggesting inefficiencies in our call handling process.*

Recommendation: *Streamline call handling processes and enhance agent support systems to reduce average handle time while maintaining quality.*

Action *Steps*:

- *Conduct a thorough review of current call handling procedures*
- *Implement an improved knowledge base system for quick information access*
- *Introduce real-time dashboards for agents to monitor their performance*
- *Develop a tiered support system to escalate complex issues efficiently*

Expected Outcome: *15% reduction in average handle time, allowing us to answer an additional 10% of incoming calls.*

3. **Expand Multi-Channel Support Options**

Issue: *The consistent increase in call volume suggests that phone calls might be the primary or preferred contact method for most issues, potentially overwhelming our system.*

Recommendation: Expand and promote alternative support channels to reduce the burden on phone lines.

***Action Steps**:*

- *Enhance our website's self-service capabilities (FAQs, tutorials, account management)*
- *Implement a chatbot for handling simple inquiries*
- *Introduce a callback option for customers during high-volume periods*

- *Launch an email support system with guaranteed response times*
- *Develop a mobile app for common customer service tasks*

Expected Outcome*: 25% reduction in non-complex phone inquiries, freeing up resources for more critical calls and improving overall response rates.*

By implementing these recommendations, we anticipate a significant improvement in our call center's performance metrics. We project an increase in our overall answer rate from the current low of 35% to a target of 75% within six months of implementation. This will not only reduce customer frustration but also improve the efficiency and job satisfaction of our call center staff.

These strategies address the core issues identified in our analysis and provide a roadmap for transforming our call center operations to meet the growing and changing demands of our community.

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4. Optimize Resource Allocation and Timing

Issue: The bubble chart reveals that our call handling capacity remains consistent despite fluctuations in call volume, indicating inefficient resource allocation. Additionally, timing of calls may be impacting our ability to handle volume effectively.

Recommendation*: Implement a data-driven resource allocation strategy and optimize scheduling based on call timing patterns.*

Action Steps:

- *Analyze call volume patterns by time of day, day of week, and season*
- *Implement workforce management software for dynamic scheduling*
- *Introduce split shifts and flexible working hours to cover peak times*
- *Crosstrain staff from less busy departments to assist during high-volume periods*
- *Offer incentives for shifts during historically busy times*

Expected Outcome*: 25% improvement in call answer rates during peak periods and 15% reduction in idle time during slower periods.*

4. Leadership and Independent Decision Making:

- *When I first tackled this project, I knew I had to step up and lead by example. There was a mountain of data and some serious challenges facing our call center. Instead of getting overwhelmed, I decided to take charge and dive deep into the numbers.*
- *I took initiative by spending extra hours experimenting with various data visualization techniques. It was like being a detective, searching for clues in our call center's story. My persistence paid off when I uncovered that critical insight about our call answering capacity hitting a ceiling regardless of incoming volume. That discovery became the cornerstone of my analysis.*
- *Taking ownership of the project, I didn't stop at just identifying problems. I challenged myself to think like a leader and come up with comprehensive solutions. I asked myself, "If I were running this call center, what would I do to transform it?" This mindset pushed me to look beyond quick fixes and consider long-term, sustainable improvements.*
- *I demonstrated strategic thinking by developing a multi-faceted approach. Instead of just recommending more staff, I proposed innovative solutions like dynamic workforce management and process optimization. I also showed foresight by considering factors like resource allocation, call timing, and staff well-being – elements that are often overlooked but crucial for long-term success.*
- *Throughout the process, I maintained a positive attitude, viewing each challenge as an opportunity for improvement. I focused on solutions that would not only solve current issues but also empower our team to handle future challenges. This forward-thinking approach is something I believe a good leader should always strive for.*
- *Lastly, I made sure my recommendations were clear, actionable, and backed by data. I put myself in the shoes of decision-makers, ensuring my proposals were not just theoretical but practical and implementable.*
- *I'm confident that this experience has not only produced valuable insights for our call center but has also helped me grow as a leader. I'm excited about the potential impact of these recommendations and look forward to seeing our call center transform into a more efficient, responsive, and employee-friendly operation.*