ABC Call Volume Trend Analysis

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Excel sheet – Call_Volume_Trend_Analysis

Project Description

This project is centered around analyzing the customer support call data to enable optimal staffing for customer support agents, which in turn will improve the level of customer service being offered through the support channels. The goal of the project was to analyze the data for trends in customer call volumes, the amount of time customers are waiting, overnight shift workload, and then create a manpower plan using a data-based approach. In total, I aimed to analyze four aspects that related to the four problem statements above:

- Time Slot Analysis: Determine the specific time slot customers are calling in during peak hours.
- Agent Performance Analysis: Assess individual agent performance with regard to efficiency and value delivered.
- Queue Time Impact Analysis: Understand how long customers are waiting in the queue and the subsequent impact
- Night Shift Manpower Planning: Plan the agent shifts that occur between the hours of 9 PM and 9 AM to reduce call abandon rate.

Approach

- Data Cleaning: Prepared and organized call data using Python and Excel.
- Slot Analysis: used a time slot analysis to group calls by hourly buckets and locate peak traffic hours.
- Agent Analysis: Compared calls counts, call durations and wrap time based on agent, in order to assess the agent's overall effectiveness.
- Abandonment Study: studied the relationship between wait time and abandonment.
- Night Shift Staffing: Used distribution of calls and productivity assumptions to create a lean staffing model that satisfied service levels.

Tech Stack used

Microsoft Excel 2022 Used for data preprocessing, statistical analysis, creating PivotTables, applying conditional formatting, and charts (bar, pie, histogram, etc.) to visualize trends and distributions.

Insights

- Peak Call Hours: Most of the customer calls occur between the hours of 11 AM–2 PM and 5 PM and 6 PM. As such, you will need to focus on agent availability.
- Agent Performance: Some agents are able to handle considerably more calls in a effectively while others are under performing i.e. highlighting coaching opportunities.
- Queue time impact: Longer wait times are directly related to dropped calls—keeping queue time under 5 seconds would have an impact on the customer's satisfaction.
- Night Shift Planning: Only 30 night calls for every 100 day calls; we only need to deploy 1 agent/hour and a team of 5 rotating agents/month will ensure 90% of calls are answered with low staffing cost.

Task 1: Call Volume & Duration Trend Analysis

Aim: Identify peak call hours and peak call volume.

Observations:

- Hourly distribution of call volume shows peak volume between 10 AM - 1 PM. Post 1 PM call volume decays over the afternoon.
- Long calls were more frequent between 3 PM - 6 PM with the maximum long call time of 3.04 - 3.00 mins.

Insight:

- Peak volume does not imply longest duration
- Calls in the afternoon were longer, perhaps due to increased complexity/complexity of questions.

Task 2: Agent Productivity Analysis

Goal: Figure out how many agents are needed for each hour bucket to answer 90% of calls.

Results:

- Most staffing during 11 AM -2 PM needed: ~1,141 & 1,220 agents.
- Agent handling capacity drops, as call duration increased (ex. 5 - 6 PM).

Approach:

- 60% of actual working time = 7.5 hours x 60% = 4.5 hours/day versed agent.
- Effective rate of call handling derived from avg. call duration.

Task 3: Queue Time & Abandon Rate Analysis

Aim: Reduce the number of customers abandoning the call by better managing queue time.

Findings:

- Abandonment rates sharply increase when time in queue is greater than 5 seconds.
- Sweet spot: Under 5 seconds = significantly higher customer retention.

Insight:

- If the customer's wait exceeds 10 seconds, offer callback choice or IVRs with a self-service option.
- Work to reduce your average queue time most in the high-volume time slots.

Task 4: Night Shift Manpower Planning

Objective: Schedule manpower between the time of 9 PM - 9 AM for 30 percentage of nightly calls on 100 daily calls.

Results:

- Distribution was highest between the hours of 2 - 3 AM (4 calls), others were approximately 2 - 3 calls/hour.
- 1 agent/hour should be adequate based on what was assumed of the productivity.
- In total, 5 agents rotation should represent a full night shift and 90% response should be attainable to the response target.

Insight:

- This will be a cost-effective solution that doesn't affect service levels.
- Utilize rotational shifts or if they want to continue as part-time.