# ABC CALL VOLUME TREND ANALYSIS

-Sourav Pattanayak

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# Project Description

**The project was completed with insights following a few major steps,**

- ✓ **Project Focus:** Analyzing Customer Experience (CX) in an inbound calling team with a 23-day dataset, covering agent details, queue times, call times, call duration, and call status.

- ✓ **CX Team Importance**: Highlighting the vital role of CX teams in collecting, analyzing, and sharing customer insights within an organization.

- ✓ **AI-Driven CX Tools:** Recognizing the use of AI-powered tools like IVR, RPA, Predictive Analytics, and Intelligent Routing to enhance customer experiences.

- ✓ **Inbound Support Goal:** Emphasizing the objective of inbound customer support to attract, engage, and delight customers, ultimately building loyal advocates for the business.
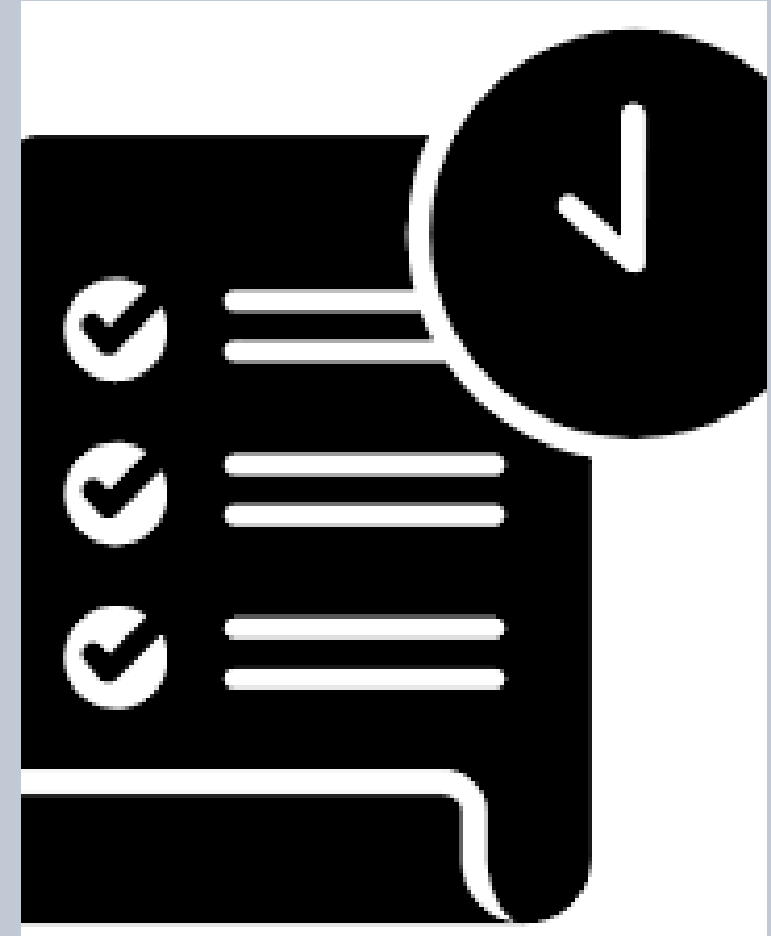
# Project Objectives

**The project was divided into four major objectives**:

✓ **Dataset Overview**: The dataset contains 117,989 rows and 13 columns, providing detailed information about inbound calls to ABC Insurance Company.

✓ **Average Call Duration**: To Calculate the average call duration for each time bucket to gain insights into call handling efficiency.

✓ **Call Volume Analysis:** To Create a graph or chart to visually represent the number of calls received across different time buckets, enabling a clear understanding of call volume patterns.

✓ **Manpower Planning (Day Shift):** To Devise a workforce allocation plan for each time bucket during the day to reduce the abandon rate to 10%, ensuring at least 90 out of 100 calls are answered.

✓ **Manpower Planning (Night Shift):** To Propose a plan for handling the 30 nighttime calls to maintain a maximum abandon rate of 10%, enhancing the overall customer experience.
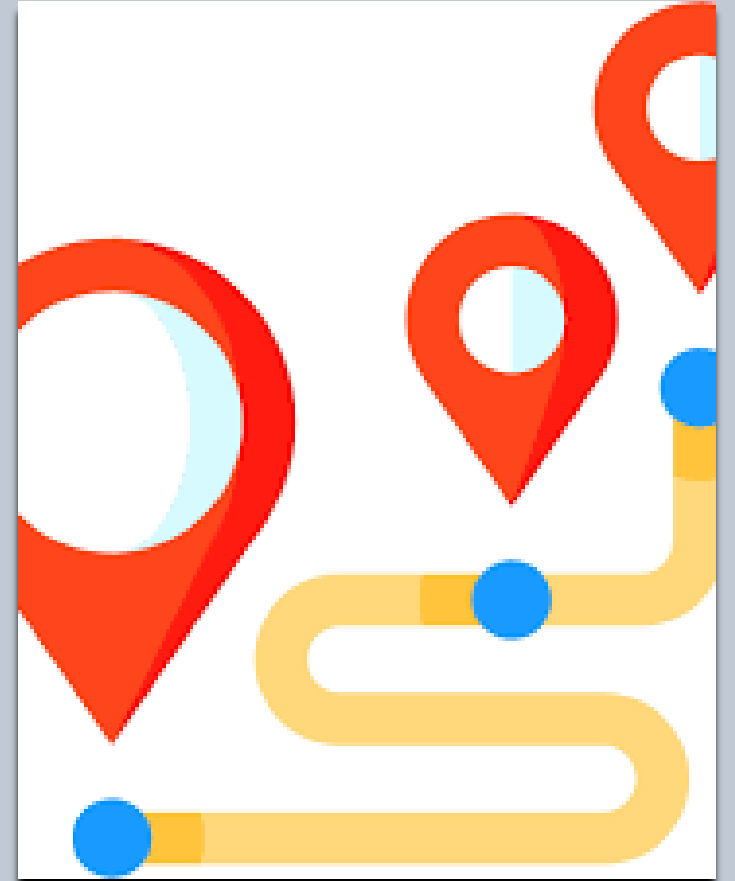
# Approach

- ✓ **Data Analysis Techniques:** Utilized Advanced Excel formulas and statistical methods to conduct in-depth data analysis, extracting meaningful insights from the dataset.

- ✓ **Assumption-Based Modeling:** Incorporated relevant assumptions, such as employee working hours (excluding breaks and downtime), to facilitate accurate calculations and decision-making.

- ✓ **Visualized Results**: Employed charts and graphs to visually represent and communicate the project's findings, making complex data more accessible and actionable.

- ✓ **Mathematical Precision:** Applied rigorous mathematical techniques to ensure the accuracy of results and support informed decision-making within the project.

- ✓ **Holistic Approach**: Considered a comprehensive view of call center operations, including both day and night shifts, to optimize manpower allocation and enhance the customer experience.

# Methodology and Teach-Stack Used

- ✓ **Tool Stack:** Leveraged Microsoft Excel 2021 for data manipulation and analysis, Microsoft PowerPoint for presentation, and utilized the Data Analysis tool within Excel.

- ✓ **Functional Expertise**: Employed a diverse range of Excel functions and statistical tools to conduct a comprehensive analysis, extracting valuable insights from the dataset.

- ✓ **Real-World Context**: Incorporated real-life assumptions from IT offices and work strategies to ensure practical and relevant outcomes for decision-making.
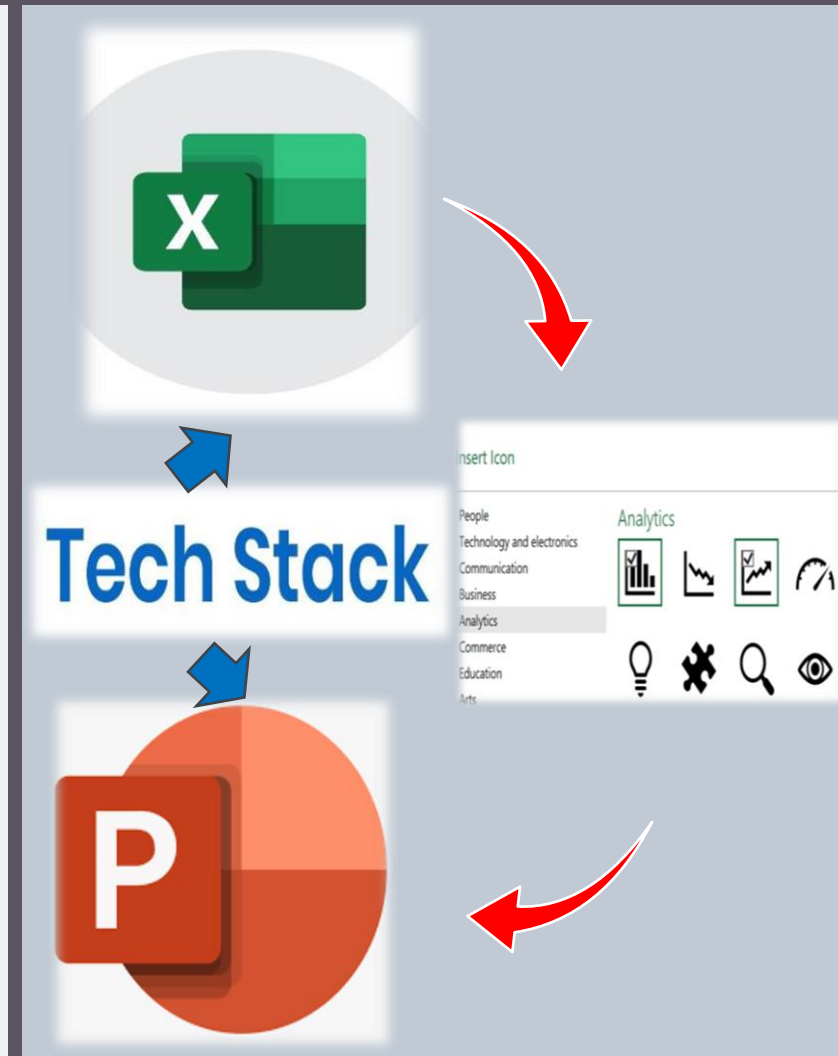
# Assumptions

- ✓ **Agent Workweek**: Agents work 6 days a week.

- ✓ **Unplanned Leaves**: On average, each agent takes 4 unplanned leaves per month.

- ✓ **Working Hours**: An agent's total working hours are 9 hours per day.

- ✓ **Break Time**: Agents spend 1.5 hours on lunch and snacks during office hours.

- ✓ **Call Handling Time**: On average, agents spend 60% of their actual working hours (60% of 7.5 hours) on calls with customers/users, here I have considered it 6 hours.

- ✓ **Monthly Days**: The total number of days in a month is assumed to be 30.

- ✓ **IT Downtime and Meetings**: Deducting time for IT errors, device downtime, and meetings, agents have an actual working duration of 6 hours per day.
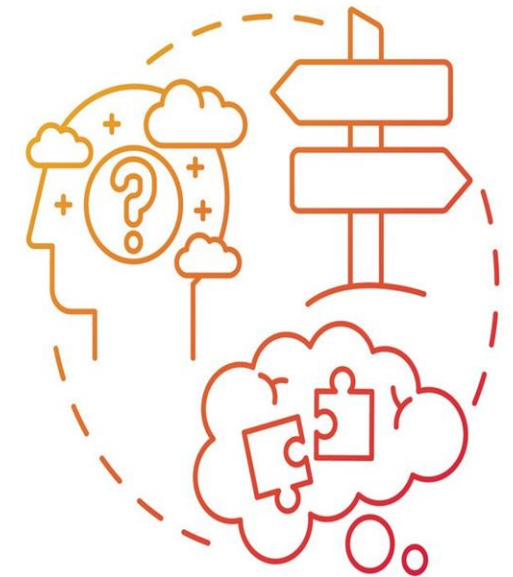

ASSUMPTIONS

# Insight-1:Visualizing Average Call Duration across Time Buckets

✓ **The graph shows the average call duration distribution in each time bucket of the Day shift.**

✓ **The lowest average duration is seen on 12 to 1 PM and the highest is seen on Morning and Evening buckets.**

✓ **The average duration is calculated on ANSWERED calls only.**

To inspect the Excel sheet and detailed calculations, ***click here.***
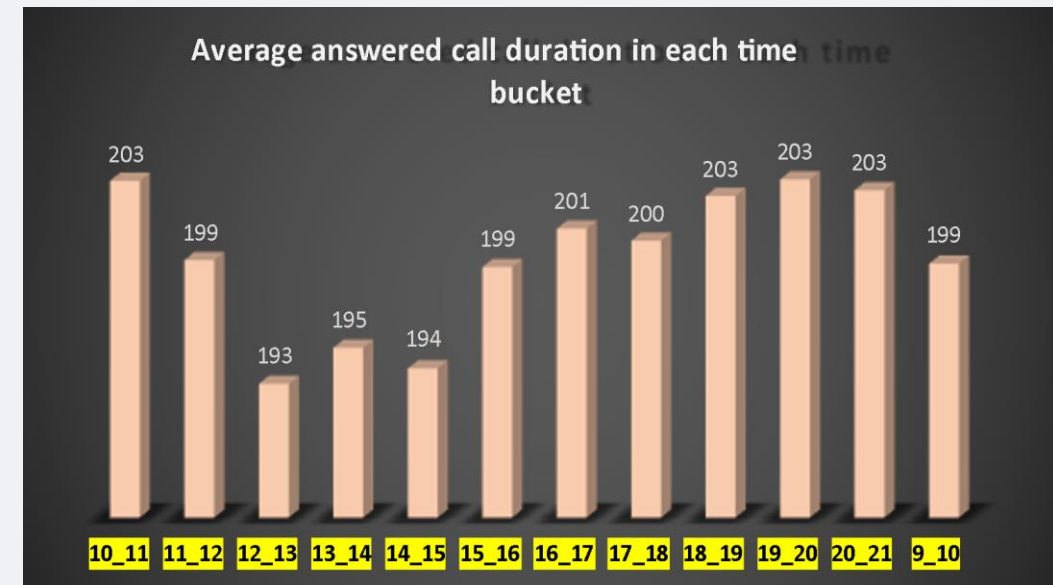
# Insight-2:Visualizing call volume across Time Buckets

To inspect the Excel sheet and detailed calculations, **click here.**

✓ The graph shows the counts of received calls and their ratio in each time bucket.

✓ The counts of the customer phone numbers were set to the secondary axis and the count of received calls were set to the primary axis.

✓ There is a sharp decrease in count of received calls from 12Pm afterwards.



Calls received in each time bucket
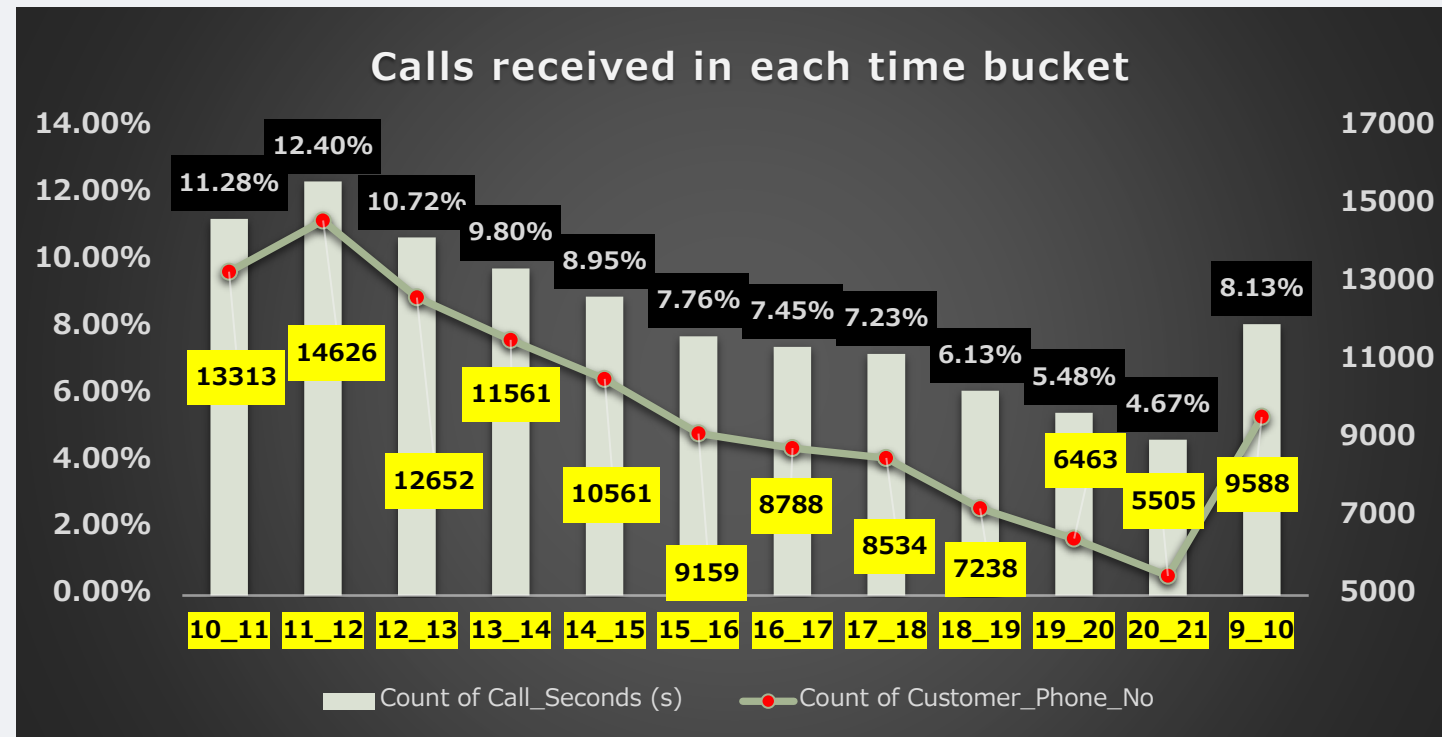
# Insight-3:Optimizing Agent Allocation for 10% Abandon Rate

- ✓ **The graph displays customer phone number counts, ratio distribution, and average call durations for each call status (abandoned, answered, transferred)**

- ✓ **The ratio of counts of the customer phone numbers was set to the secondary axis and the counts of customer phone numbers and average call duration(s) were set to the primary axis.**

- ✓ **The number of answered calls tops the call status.**

To inspect the Excel sheet and detailed calculations, **_click here._**
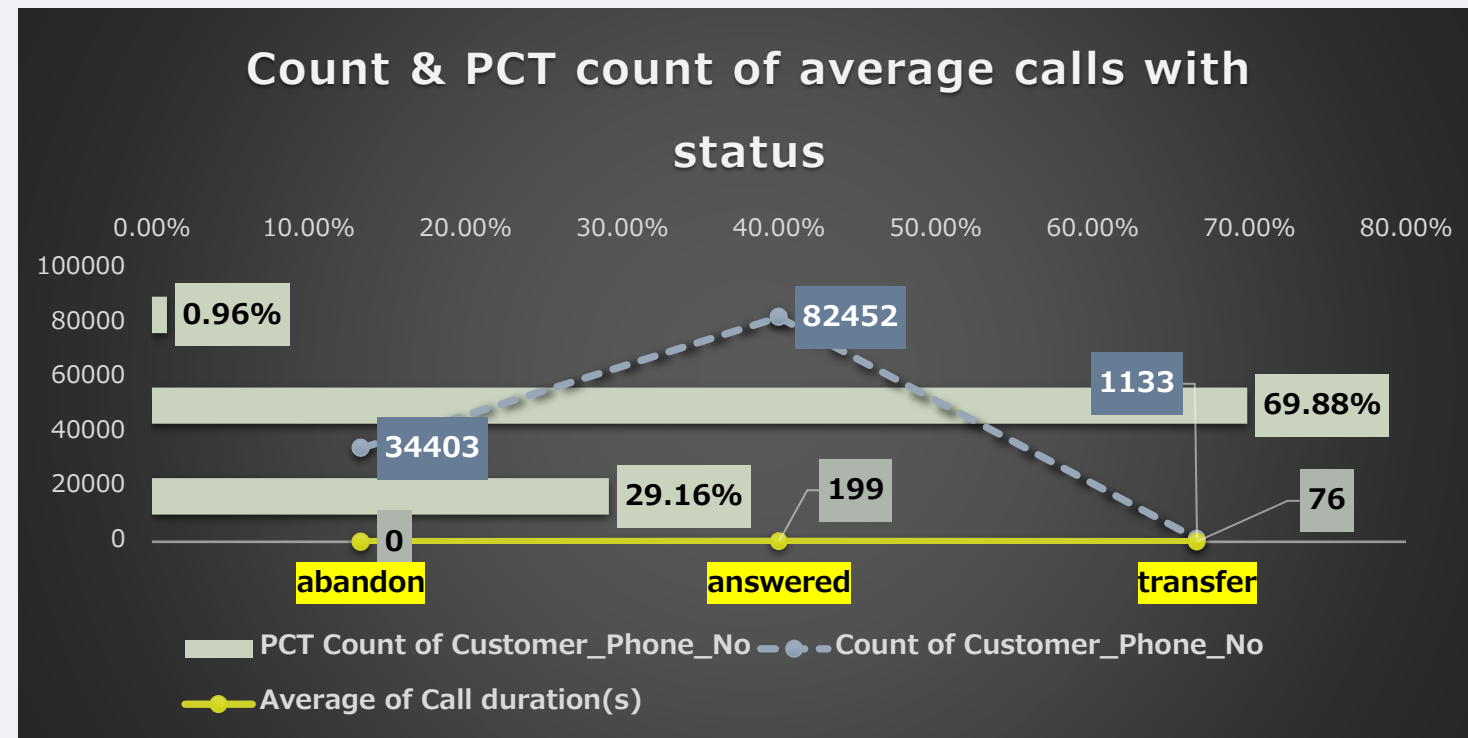


Count & PCT count of average calls with status

# Insight-3: Explanation

- ✓ The Date & Tim feature was given where both Dates and Time were together, I have extracted the Date from the feature into a new feature named 'Dates'. The formula used is *=INT(Cell number)* and dragged it down to fill up all the cells.

- ✓ Then I have converted the Date format of DATES to DD-MM(e.g.: 1-JAN)

- ✓ Created a pivot table and filtered the Sum Of a number of call durations for 1st Jan only, divided it by 3600 to convert it into hours.

- ✓ The hour value,187.962222 is divided by 6 since an agent works for 6 hours a day and this result gives me a total number of agents working in a day.

- ✓ As this agent efficiency is 60% efficiency, to be efficient as much as 90% with only 10% abandoned calls, the number of agents that will be required is: 46.

- ✓ Distributed 46 in separate time buckets to get the desired number of required agents in different time buckets.

- ✓ Converted the count of calls into oct and then into decimals and multiplied it with 46 each. Rounded it later.

# Insight-4: Efficient Manpower Planning for 10% Max Abandon Rate, Including Night Shifts(Estimated)

✓ *The average of incoming calls from 01-01-2022 to 23-01-2022 is 5129.91304*

✓ *The average is calculated using Excel's AVERAGE method, The Formula used is* **=AVERAGE(E4:E26)**

Means,
In 30 days, an average of 5130 calls are coming in a day, and as we know a day's 30% of calls are coming at night,
Hence,
✓ *The average number of calls coming at night is:1539[Formula used is* **=(5130/100)*30]**

Now,
From Question 1, We have already got the average duration of all calls(in s) which is 199.
And we will have to answer 90% calls(means upto 10% call can be abandoned),
Hence,

✓ **Conclusion-I** Additional Time Required is(in seconds): 275635
✓ **Conclusion-II** Additional Time Required is(in hours): 77

Since an agent works for 6 hours,
✓ **Conclusion-III** For an additional 77 hours of work, the number of additional agents required will be 13.

To inspect the Excel sheet and detailed calculations, *click here.*

# Insight-4: Efficient Manpower Planning for 10% Max Abandon Rate, Including Night Shifts(Precise)

✓ The estimated/Calculated number of required additional agents for the night shift based on The given condition is 13.

But the distribution results in a decimal value which can not be true, number of agents can not be a decimal value.

Hence,

✓ The number of agents required in each time bucket is rounded off and that gives me a total of 11 additional required agents.

✓ Conclusion-I

The total number of estimated additional agents required is 13.

To inspect the Excel sheet and detailed calculations, **_click here._**

✓ Conclusion-II

Total number of additional agents required in practical is 11.

# Key findings

- ✓ **Call Durations**: Average call durations range between 193 to 203 seconds. The highest call durations with answered calls occur from 6 PM to 9 PM.

- ✓ **Call Volume Trends**: Call volume gradually increases from 9 AM, peaking at 11-12 AM, followed by a sharp decline until 9 PM in each time bucket.

- ✓ **Call Handling**: Answered calls have the highest count and call duration, followed by transferred calls. To reduce the 30% abandon rate to 10% in the day shift, 46 agents are required, with 15 additional agents needed (highest allocation at 11 AM - 12 PM).

- ✓ **Night Shift Optimization**: To maintain a 10% abandon rate during night shifts with 30 calls/day, an estimated 13 (precise 11) additional agents are needed, with the highest allocation between 6 PM to 9 PM.
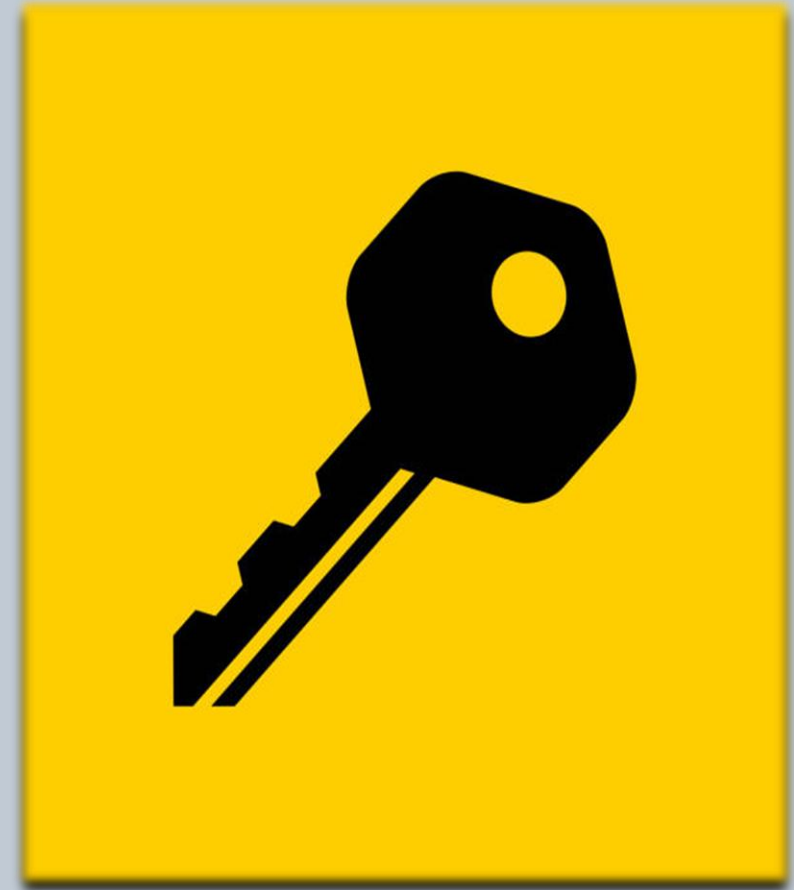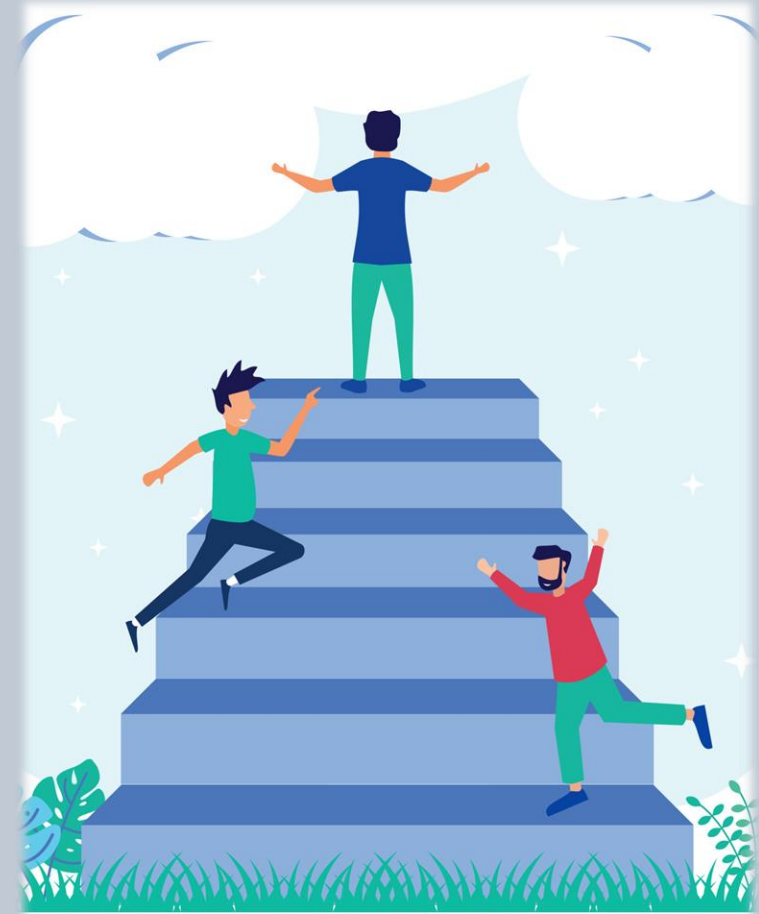
# Conclusions

- ✓ **Call Durations and Timing**: The team should Recognize the consistent call duration range (193-203 seconds) and prioritize agent allocation for peak hours, particularly 6 PM - 9 PM, to handle high-quality calls effectively.

- ✓ **Call Volume Patterns**: The team should Acknowledge the daily call volume pattern, with a peak around 11 AM - 12 PM, and optimize agent allocation accordingly to ensure prompt customer service.

- ✓ **Call Handling Priority**: Need to Focus on improving answered calls and their durations, followed by transferred calls, to enhance overall customer satisfaction.

- ✓ **Agent Allocation**: An Allocation of 46 agents during the day shift and 13 (precise 11) additional agents for night shifts meet call demand and reduce the abandon rate to 10%.

- ✓ **Quality Assurance**: The team needs to Implement quality assurance measures, monitor agent performance, and provide ongoing training to maintain consistently high-quality interactions with customers, especially during peak hours.

# Achievements

**This project has helped me learn few important things, I have learned,**

- ✓ **Excel Proficiency**: Enhanced Excel skills, including advanced formulas and data analysis techniques.

- ✓ **Statistical Insights**: Gained valuable statistical insights for optimizing call center operations.

- ✓ **Real-World Application**: Applied analysis to real-world business scenarios, improving decision-making.

- ✓ **Customer Experience Focus**: Focused on enhancing customer experience through data-driven strategies.

- ✓ **Efficiency Enhancement**: Achieved efficiency improvements in agent allocation and call handling

# THANK YOU