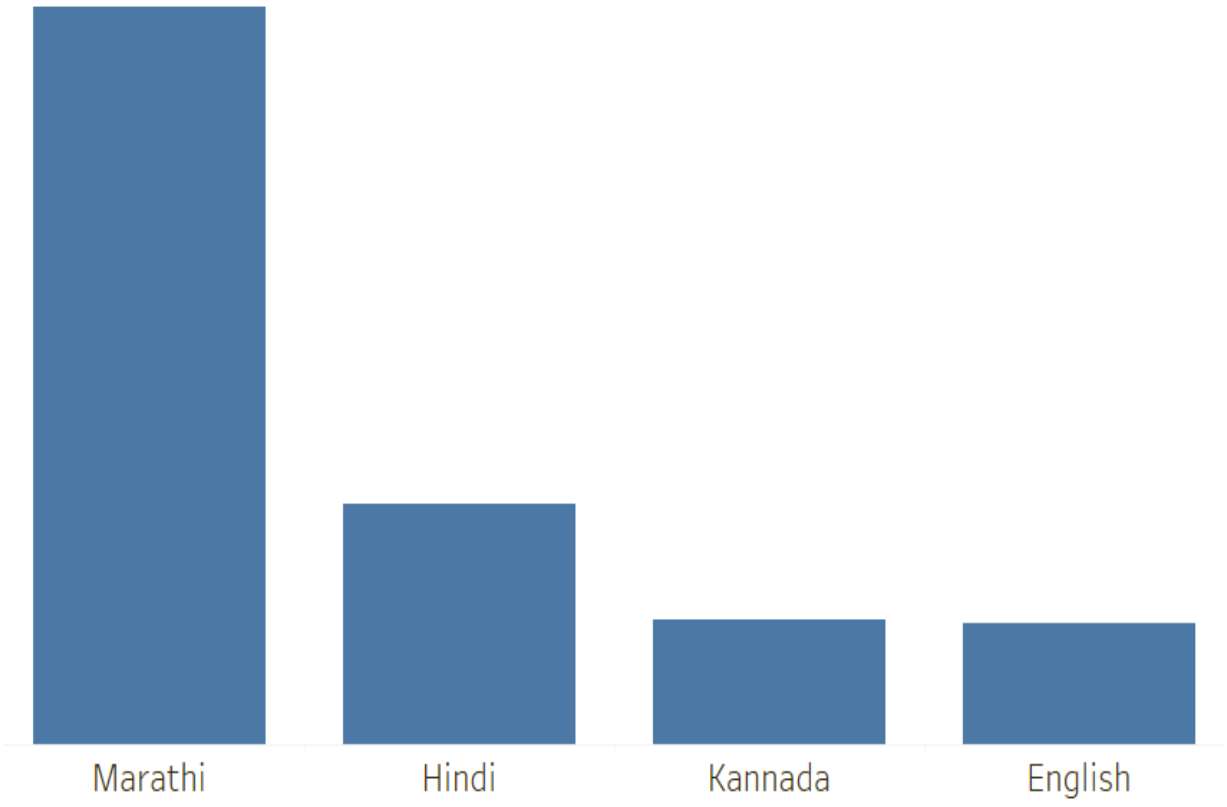
ASSIGNMENT

By Ulenkhomba Konthoujam

A comprehensive report of valuable insights and actionable recommendations for a company specializing in automated voice calling services.

1. Language Level Collection :

- Analyzing the collection rates based on different languages used in the automated calls.



INSIGHT :- Our multilingual payment automation revealed Marathi as the most successful in terms of total number of successful calls, followed by Hindi. English and Kannada share third place.

- **Checking the collection rates based on the four languages :**

QUERY :

```
WITH tab_a AS (
  SELECT
  language,
  COUNT(*) as total
  FROM `project_job.langauge`
  WHERE LOWER(channel) = 'call'
  GROUP BY language
), tab_b AS (
  SELECT
  language,
  COUNT(*) as total1
  FROM `project_job.langauge`
  WHERE disposition = 'Agree To Pay' AND LOWER(channel) = 'call'
  GROUP BY language
) SELECT
  a.language,
  ROUND(total1*100/total,2) AS collection_rate_pc
  FROM tab_a AS a
  JOIN tab_b AS b
  ON a.language = b.language
  ORDER BY 2 DESC
```

OUTPUT :

language	collection_rate_pc
Marathi	7.3
Kannada	7.2
Hindi	7.17
English	7.1

INSIGHT : These percentage-based collection rates provide insightful rankings for our multilingual payment automation project. Marathi leads with an impressive 7.3%, showcasing its effectiveness, closely followed by Kannada, Hindi, and English, indicating varied linguistic impacts on successful payment collections.

2. Demographic Analysis :

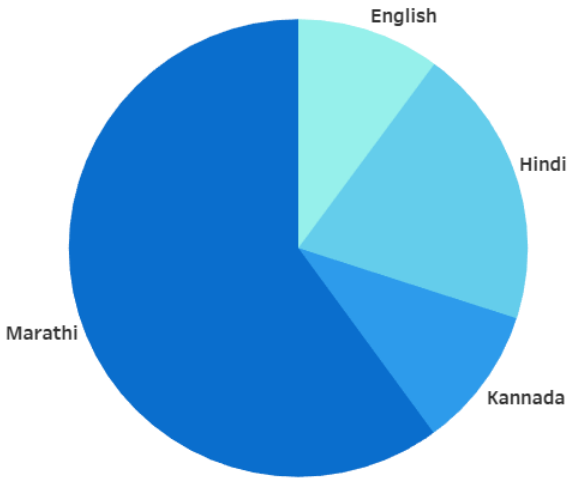
QUERY :

```
SELECT language,
COUNT(*) AS total
FROM `project_job.langauge`
GROUP BY language
ORDER BY 2 DESC
```

OUTPUT :

language	total
Marathi	82728
Hindi	27358
English	13934
Kannada	13764

VISUALIZATION :



INSIGHT : The data reveals a significant Marathi-speaking user base at 82,728, possibly concentrated in Maharashtra. Hindi, with 27,358 speakers, signifies influence across Hindi-speaking regions. English (13,934) and Kannada (13,764) indicate diverse linguistic preferences, with potential regional concentrations.

3 . Gender-wise Analysis :

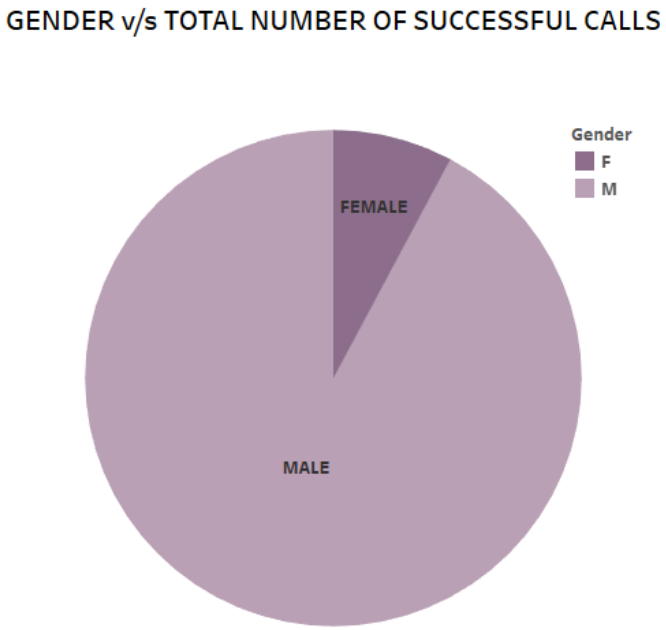
QUERY :

```
SELECT
gender,
COUNT(*) AS total_success
FROM `project_job.gender_wise`
WHERE disposition = 'Agree To Pay'
GROUP BY gender
```

OUTPUT :

gender	total_success
M	9208
F	793

VISUALIZATION :



INSIGHT : Understanding the successful completion data from each gender provides valuable insights. With 9,208 successful completions from male users and 793 from female users, it's evident that the majority of successful interactions come from the male demographic. This insight prompts a closer examination of engagement strategies to ensure inclusivity and effectiveness across diverse gender segments. (*This may be affected by the number of males and female customer*)

Checking the collection rates based on gender :

QUERY :

```
WITH tab_a AS (
  SELECT
  gender,
  COUNT(*) as total
  FROM `project_job.gender_wise`
  WHERE gender is not null
  GROUP BY gender
), tab_b AS (
  SELECT
  gender,
  COUNT(*) as total1
  FROM `project_job.gender_wise`
  WHERE disposition = 'Agree To Pay'
  GROUP BY gender
) SELECT
  a.gender,
  CONCAT(ROUND(total1*100/total,2),"%") AS collection_rate
  FROM tab_a AS a
  JOIN tab_b AS b
  ON a.gender= b.gender
  ORDER BY 2 DESC
```

OUTPUT :

gender	collection_rate
M	24.57%
F	17.14%

INSIGHT : The collection rates reveal distinctions, with males at 24.57% and females at 17.14%. This indicates a higher success rate among males in the completion of tasks. Understanding and addressing these gender-specific variations can enhance targeted engagement strategies for improved overall effectiveness.

ADDITIONAL INSIGHT :

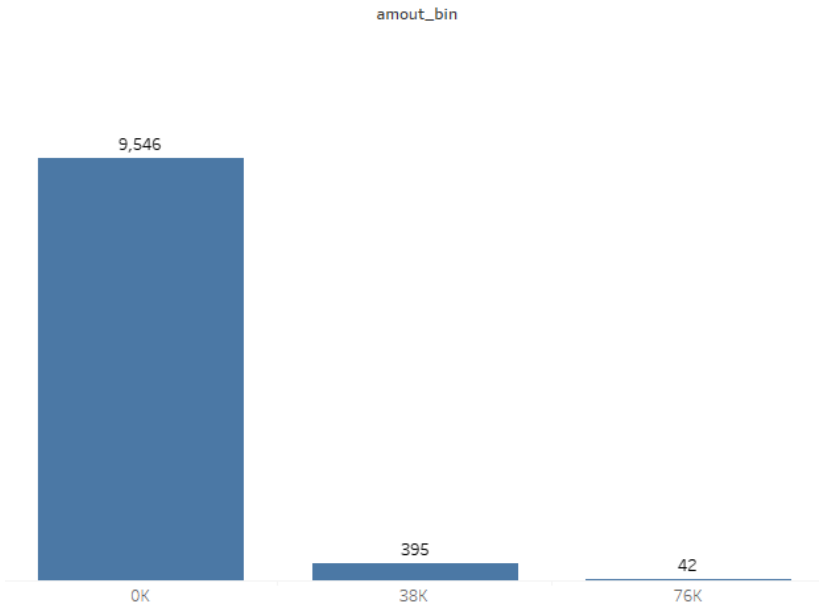
gender	unsuccesful_rate
F	82.86%
M	75.43%

The data reveals an unsuccessful rate of 82.86% for females and 75.43% for males. These figures underscore the importance of tailoring strategies to mitigate unsuccessful outcomes, ensuring more effective engagement across both gender segments.

4 . EMI Amount v/s Collection rate Analysis :

Analyzing the relationship between EMI (Equated Monthly Installment) amounts and collection rates through binning is a strategic approach. By categorizing EMI amounts into bins, you can assess how different ranges of installment values correlate with collection rates. This method allows for a nuanced understanding of how variations in EMI amounts impact the success of collections, enabling the identification of optimal installment ranges for improved overall performance.

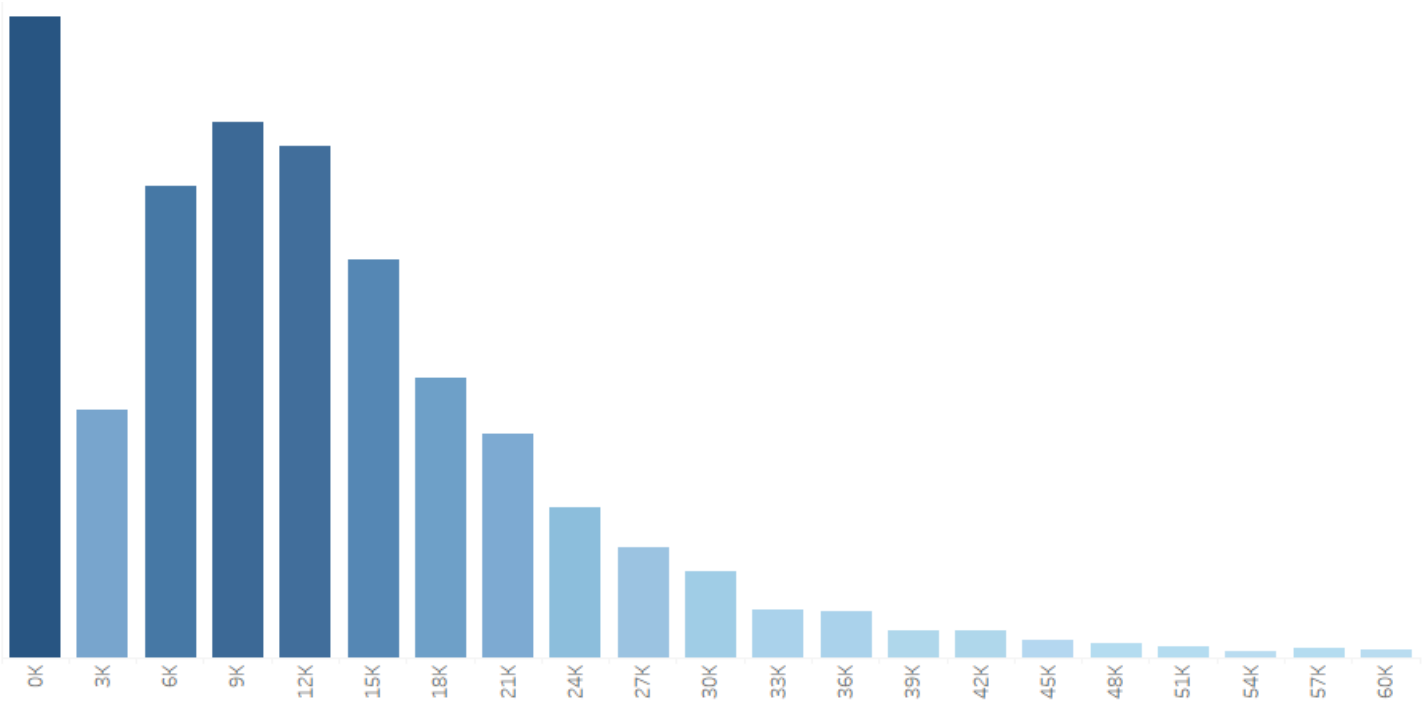
VISUALIZATION : Focusing on the top 3 bins with the highest collection rates allows for a more targeted analysis. By isolating these specific EMI ranges , we can delve deeper into understanding the factors contributing to their success. This approach aims to identify patterns and insights within the most successful installment categories, facilitating the development of strategies tailored to maximize collection rates in those specific EMI ranges.



INSIGHT :

The EMI analysis, categorized into bins of 38k increments, highlights a notable trend. Smaller EMI amounts, particularly in the 0k-38k range, exhibit a significantly higher collection rate, with a total of 9,546 completions. In contrast, as the EMI amounts increase, the number of successful completions decreases, with 38k-76k having 395 and 76k-114k having 42. This insight suggests a potential correlation between smaller EMI values and increased collection success, emphasizing the importance of tailoring strategies to different EMI brackets for optimal outcomes. Further exploration into the dynamics of lower EMI brackets could unveil key factors contributing to their higher success rates and guide targeted approaches for overall improvement.

ADDITIONAL ANALYSIS :



Analyzing the smaller EMI range from 0k to 60k with bins of 3k reveals a right-skewed distribution, centered around a mean in the 8k-9k range. The presence of an outlier in the 0k-3k bin, which stands out as the maximum value, suggests a concentration of instances with significantly lower EMI amounts compared to the rest of the dataset. This outlier may have implications for your analysis, and investigating the reasons behind the concentrated lower EMI values can provide valuable insights into the dynamics of your data.

INSIGHTS:

1. **Targeted Strategies for Lower EMI Ranges** :

Given the higher success rates in the 0k-38k range, it is recommended to implement targeted communication and engagement strategies for customers with smaller EMI obligations. Understanding the unique needs and preferences of this segment can further improve collection outcomes.

2. **Investigate Outlier Dynamics:**

The outlier in the 0k-3k bin requires thorough investigation. Understanding the reasons behind this concentration of exceptionally low EMI amounts can unveil specific challenges or opportunities within this subset. Tailoring strategies to address the unique characteristics of this outlier can contribute to more effective overall collection efforts.

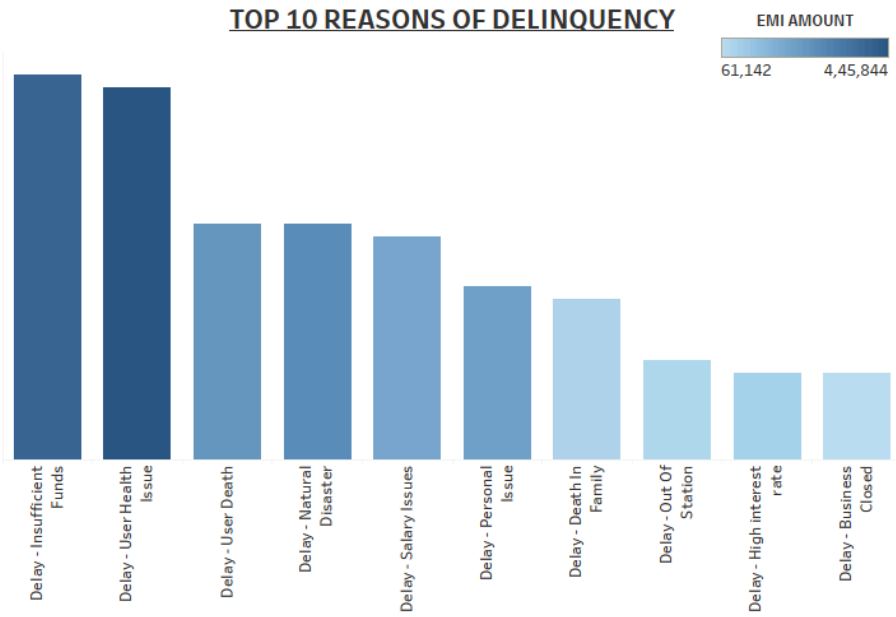
3. **Refine Right-Skewed Distribution Approaches:**

Recognizing the right-skewed distribution in the 0k-60k range with a mean in the 8k-9k range, it is recommended to refine approaches for this majority segment. Focusing on personalized communication, incentives, or payment plans within this range could optimize collection outcomes.

In summary, by targeting the smaller EMI ranges with higher success rates, addressing outlier dynamics, and refining approaches for the majority, the collection strategies can become more nuanced, resulting in improved overall effectiveness.

ADDITIONAL EXPLORATIONS :

1. **TOP 10 REASONS OF DELINQUENCY :**



Among the listed reasons for delinquency in paying EMI, let's focus on a few actionable issues and propose solutions:

Insufficient Funds:

Solution: Implement an automated notification system that alerts users well in advance of upcoming payments. Offer flexible payment options and allow users to set up auto-pay to avoid missed payments due to insufficient funds.

Health Issues:

Solution: Introduce a hardship program that allows users facing health challenges to temporarily adjust their payment schedules or seek assistance. Provide clear communication channels for users to notify about health-related difficulties affecting their ability to make timely payments.

Technical Issue: Enhance the customer support system to quickly address technical issues related to online payments. Implement user-friendly interfaces and conduct regular system checks to ensure a seamless payment experience.

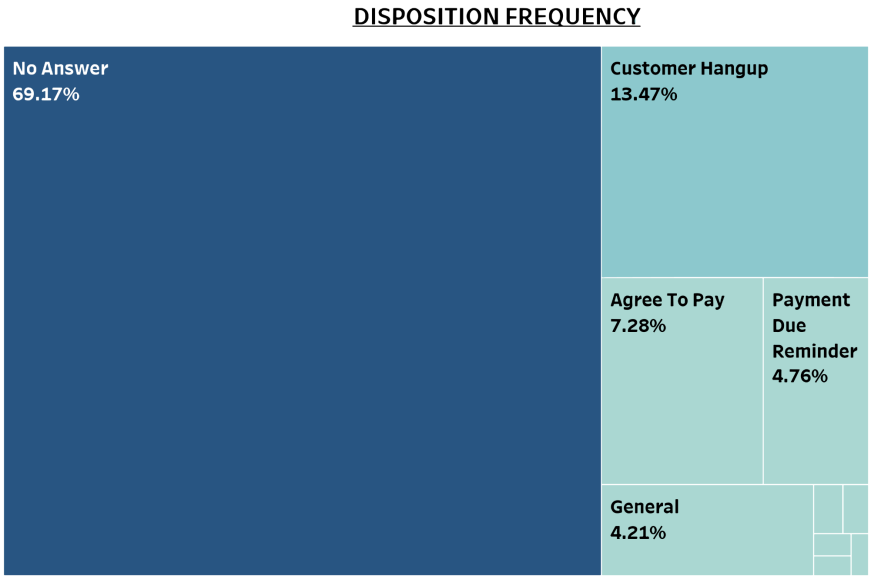
Salary Issues: Collaborate with employers to establish direct payroll deductions, ensuring timely EMI payments directly from salaries. Offer flexible repayment plans aligned with users' pay cycles.

High-Interest Rate: Review and adjust interest rates based on market conditions or offer refinancing options to provide users with more favorable terms. Clearly communicate interest rate structures to manage user expectations.

Account Issues: Establish a dedicated team to assist users in resolving account-related problems promptly. Streamline the account management process and ensure transparency in reporting to avoid confusion.

Implementing these solutions can address specific issues users may face and contribute to a more user-friendly and accommodating system. Additionally, fostering transparent communication and providing support channels will help build trust and understanding between the financial institution and its users, ultimately reducing the instances of delinquency.

2. DISPOSITION FREQUENCY :



INSIGHTS : The analysis of different disposition types reveals intriguing insights. The most frequent dispositions include "No Answer" at 69.17%, followed by "Customer Hangup" at 13.47%, and "Agree to Pay" at 7.28%. The prevalence of "No Answer" suggests potential challenges in reaching customers, while "Customer Hangup" may indicate a need for improved communication strategies. Identifying patterns in dispositions can guide efforts to enhance engagement, refine communication approaches, and increase successful outcomes, ultimately optimizing the effectiveness of customer interactions in debt recovery or payment processes.

Disposition	Call	Message
No Answer	47,614	47,378
Customer Hangup	9,305	9,198
Agree To Pay	5,007	4,994
Payment Due Reminder	3,330	3,206
General	2,957	2,830
Failed	192	248
Acceptable Promise To Pay	196	177
Busy	115	137
User Busy	120	113
User Claimed Payment	94	129
RTP - Counselled	83	91
Dispute	60	65
Refused to Pay	38	38
Human Handoff Requested	31	23
User Claimed Payment wi..	3	3
Unacceptable Promise To ..	2	3
end delay	2	2

From the heat map, we can see that there is not a very significant difference between Call and Message in every aspect of Disposition

RECOMMENDATIONS :

- **Leverage Marathi Success:**
  Develop and expand Marathi-specific communication strategies, considering its high success rate.

- **Inclusive Communication for Gender Equity:**
  Implement engagement strategies that address observed gender disparities, ensuring equal success rates for both male and female audiences.

- **Target Smaller EMI Ranges:**
  Design targeted campaigns for smaller EMI brackets (0k-38k) to capitalize on higher collection rates.

- **Mitigate Technical Issues Promptly:**
  Strengthen customer support to swiftly address technical issues, conducting regular system checks for a seamless online payment experience.

- **Enhance Communication for No Answer Scenarios:**
  Refine communication strategies for "No Answer" dispositions, implementing follow-up procedures and optimal calling times.

- **Holistic Approach to Delinquency Reasons:**
  Develop a comprehensive strategy to address delinquency reasons, collaborating with employers and offering hardship programs.

- **Transparent Interest Rate Communication:**
  Clearly communicate interest rate structures and periodically review rates based on market conditions.

- **Create Direct Payroll Deduction Partnerships:**
  Collaborate with employers to establish direct payroll deductions, aligning with user pay cycles.

- **Streamline Account Management:**
  Establish a dedicated team to promptly resolve account-related problems, ensuring transparent reporting for improved user experience.

- **Continuous Data Analysis and Iterative Improvement:**
  Implement a system for continuous data analysis, utilizing insights for iterative improvements in communication, engagement strategies, and overall payment automation processes.

TOOLS USED :

GOOGLE-SHEET : Performing EDA and cleaning data
GOOGLE BIGQUERY : Extracting important insights in SQL
TABLEAU : Visualization