

PROJECT REPORT ON SALES ANALYSIS

1. Introduction

This report presents an in-depth analysis of the sales strategies used for a newly launched office stationery product line. The primary objective is to determine the most effective approach in driving sales and increasing customer engagement. Three distinct sales methods were tested: **Email, Call, and Email + Call**. This study examines data validation, exploratory analysis, key findings, and strategic recommendations to enhance future sales performance.

2. Data Validation and Cleaning

The dataset comprises **15,000 records** with **8 columns**, each detailing critical information related to sales performance:

- **week**: Indicates the sales week, measured in weeks since the product launch.
- **sales_method**: Specifies the outreach strategy used for each customer (Email, Call, Email + Call).
- **customer_id**: A unique identifier for each customer.
- **nb_sold**: Represents the number of products sold to the customer.
- **revenue**: The total revenue generated from each sale.
- **years_as_customer**: The length of time a customer has been associated with the company.
- **nb_site_visits**: The number of times the customer visited the website within the last six months.
- **state**: The geographical location where the order was placed.

Data Issues and Fixes

- **Revenue Column**: Contained **1,074 missing values**, which were replaced with the average revenue for each sales method.
- **Sales Method Column**: Contained inconsistencies in spelling and capitalization, which were corrected to ensure uniformity.
- **Years as Customer Column**: Two invalid values (47 and 63 years) were found and corrected to **39 years**, as the company was established in 1984, making 39 years the maximum possible duration.
- **Duplicate Entries**: No duplicate rows were detected in the dataset, ensuring data integrity.

Following these validation and cleaning steps, the dataset became **fully structured and ready for analysis**.

3. Exploratory Data Analysis (EDA)

Number of Customers per Sales Method

Analysis of customer distribution across the three sales methods revealed:

- **Email:** 5,000 customers
- **Call:** 5,000 customers
- **Email + Call:** 5,000 customers

This equal distribution ensures a fair comparison of sales strategies.

Revenue Distribution Analysis

The analysis of revenue distribution produced the following insights:

- The revenue dataset exhibits a **right-skewed distribution**, meaning most transactions generate lower revenue, while a few transactions contribute significantly higher earnings.
- **Revenue per Sales Method:**
 - **Email:** Demonstrated strong initial revenue, but experienced a **declining trend** over time.
 - **Call:** Revenue fluctuated over time, with no clear pattern, and showed a **decreasing trend** toward the later weeks.
 - **Email + Call:** Displayed a **steady increase in revenue**, indicating sustainable growth potential.

Revenue Trends Over Time

The following revenue trends were observed over the six-week period:

- **Email Method:** Initially performed well but saw a consistent decline, suggesting a diminishing effect over time.
- **Call Method:** Showed volatile revenue trends, with periods of strong sales followed by sharp drops.
- **Email + Call Method:** Demonstrated **continuous and stable revenue growth**, making it the most promising approach.

4. Business Metric for Monitoring Success

To effectively monitor the efficiency of each sales method, we define **Revenue per Effort (RPE)** as the key business metric:

$$RPE = \frac{\text{Total Revenue from Method}}{\text{Total Time Spent per Method}}$$

- **Email:** The least labor-intensive method, but its revenue impact diminishes over time.
- **Call:** Requires significant effort and resources, but lacks consistency in revenue generation.
- **Email + Call:** Achieves the highest revenue growth while maintaining an optimal balance of effort and sales efficiency.

5. Conclusion and Recommendations

Best Sales Method: Email + Call

Based on the analysis, the **Email + Call** strategy is the most effective due to:

- **Consistent revenue growth over time**, unlike the other methods that showed declining trends.
- **Higher customer engagement**, as measured by increased website visits and larger purchases.
- **Balanced effort-to-revenue ratio**, ensuring sustainable sales performance.

Action Plan for Future Sales

To optimize future sales campaigns, the following actions are recommended:

1. **Prioritize the Email + Call method** for new product launches, leveraging its proven effectiveness.
2. **Automate Email Outreach** to reduce manual effort while maintaining its impact.
3. **Enhance Call Strategy** by targeting high-value customers for personalized interactions, increasing conversion rates.
4. **Monitor Revenue per Effort (RPE)** continuously to assess efficiency and adjust strategies accordingly.

This report provides a comprehensive, data-driven approach for refining sales strategies, ensuring improved revenue performance and customer satisfaction. These findings will be presented to the executive team for review and future implementation.