**Maven Marketing Campaign Data Analysis Report**

**Problems and Background**

The dataset includes marketing campaign data for 2,240 customers of Maven Marketing, encompassing customer profiles, product preferences, campaign successes/failures, and channel performance. The analysis aims to address several key questions and insights related to this data.

**Project Scope**

The project scope involves analyzing Maven Marketing's campaign data to derive actionable insights that can enhance marketing strategies and improve campaign effectiveness. Key aspects include:

* Identifying and handling data quality issues such as null values and outliers.
* Analyzing factors influencing web purchases.
* Evaluating the success of marketing campaigns.
* Profiling the average customer based on demographic and behavioral attributes.
* Assessing product performance and identifying top-performing products.
* Evaluating channel performance to optimize marketing channel investments.

## Goals and Key Performance Indicators (KPIs)

The primary goal of this project is to enhance the understanding of customer behavior, campaign effectiveness, product performance, and channel efficiency for Maven Marketing. We aim to ensure data accuracy, identify key factors influencing web purchases, determine the most successful marketing campaigns, profile the average customer, and identify top-performing products and underperforming channels. By achieving these goals, we can provide actionable insights to optimize marketing strategies and improve overall business performance.

* 24 null values in 'Income' column managed by imputing the mean
* Campaign success rates (Response: 334).
* Sales volumes of top products (MntWines: 680,816).
* Underperforming Channels is (NumDealsPurchases: 5208)

### Methodology

* **Data sources**

**Dataset Link:** [https://www.kaggle.com/datasets/deepaksaw/marketing-dataset](https://www.kaggle.com/datasets/deepaksaw/marketing-dataset%09)

* **Data wrangling**

1. Data understanding
2. Data cleaning
3. Data merging and joining
4. Data manipulation

* **Data analysis**

1. Finding the trends and patterns

* **Data visualization**

**Technical Processes**

* Utilize Pandas Data Frame for data manipulation and analysis.
* Use Matplotlib and Seaborn for data visualization.
* Apply statistical techniques and machine learning models (if applicable) for deeper insights.
* Handle missing data using Pandas methods like fillna()
* Detect and manage outliers using statistical methods (e.g., Z-score, IQR) with Pandas and NumPy.

**Recommended Analysis**

* Are there any null values or outliers? How will you handle them?
* What factors are significantly related to the number of web purchases?
* Which marketing campaign was the most successful?
* What does the average customer look like?
* Which products are performing best?
* Which channels are underperforming?

**Conclusion**

The Maven Marketing campaign data analysis provides critical insights into customer behavior, campaign effectiveness, product performance, and channel performance. By leveraging Python's data analysis capabilities, we've identified key factors influencing web purchases, determined successful marketing campaigns, and profiled the average customer. These insights will inform strategic decisions to optimize marketing efforts and improve overall business outcomes.

**Project Owner**

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