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CRM CAMPAIGN RESPONSE PROJECT

ANALYZE AND REPORT ON MARKETING CAMPAIGNS WITH POWER BI





PROJECT OBJECTIVES

The main objective of this project is to explore how different types of CRM marketing campaigns perform across various customer segments.

Using Power BI as the main tool, this project aims to visualize campaign effectiveness, understand customer responses, and identify patterns that may help improve future marketing strategies.

In addition, Python was used for basic statistical testing to support data-driven insights. The project was developed using synthetic data for the purpose of learning and practice.

Dataset Overview

Data Detail

The main objective of this project is to explore how different types of CRM marketing campaigns perform across various customer segments. Using Power BI as the main tool, this project aims to visualize campaign effectiveness, understand customer responses, and identify patterns that may help improve future marketing strategies.

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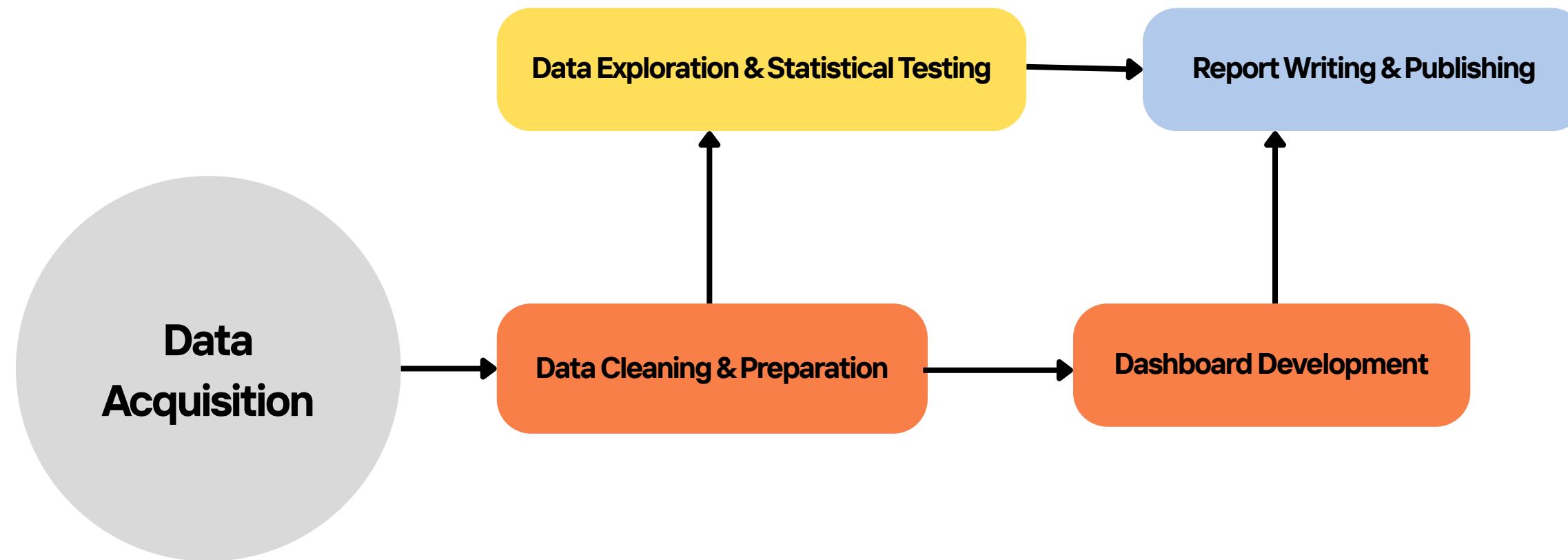
Data Source

This dataset is synthetic and was created for the purpose of practicing CRM and marketing campaign analysis.

Source: Kaggle – [Marketing Campaign Performance Dataset](#)

****The data does not represent actual customer behavior or real business outcomes.****





WORKFLOW

The diagram above outlines the end-to-end process of this project. It begins with data acquisition, where a synthetic dataset was loaded into a MySQL database on AWS RDS. Next, data cleaning and preparation were performed using SQL, ensuring the dataset was consistent and analysis-ready.

The cleaned dataset was then used in two parallel tracks:

- Data exploration and statistical testing was conducted in Python to uncover deeper insights.
- Dashboard development was carried out in Power BI to visualize key campaign metrics.

Finally, findings from both tracks were consolidated during the report writing and publishing phase, resulting in a one-page executive dashboard and a structured summary for use in a data analytics portfolio.

PROCESS OVERVIEW





STATISTICAL TESTING

TO SUPPORT THE DASHBOARD FINDINGS WITH STATISTICAL EVIDENCE, TWO TYPES OF TESTS WERE CONDUCTED: ANOVA AND CHI-SQUARE

ANOVA

Checks if there are significant differences in mean values (e.g. ROI, conversion rate) across campaign types or customer segments

CHI-SQUARE

Checks if there's a relationship between two categorical variables (e.g. channel used × customer segment)



STATISTICAL RESULTS SUMMARY

THIS SECTION SUMMARIZES THE FINDINGS FROM THE ANOVA AND CHI-SQUARE TESTS USED IN THE ANALYSIS

ANOVA RESULTS

Test	Variables Tested	F-Statistic	P-Value	Conclusion
ANOVA	ROI by Campaign Type	1.0170	0.3969	No significant difference
ANOVA	Conversion Rate by Customer Segment	0.8991	0.4634	No significant difference
ANOVA	Engagement Score by Campaign Type	0.4255	0.7903	No significant difference

SIGNIFICANT LEVEL = 0.05

INTERPRETATION

THE CAMPAIGN PERFORMANCE METRICS ACROSS DIFFERENT CAMPAIGN TYPES AND CUSTOMER SEGMENTS DID NOT SHOW STATISTICALLY SIGNIFICANT VARIATION. THIS SUGGESTS THAT ALL CAMPAIGN TYPES PERFORMED RELATIVELY SIMILARLY IN THIS SYNTHETIC DATASET.

STATISTICAL RESULTS

SUMMARY

THIS SECTION SUMMARIZES THE FINDINGS FROM THE ANOVA AND CHI-SQUARE TESTS USED IN THE ANALYSIS

CHI-SQUARE RESULTS				
Test	Variables Tested	Chi^2	P-Value	Conclusion
Chi-Square	Channel × Customer Segment	19.1343	0.5131	No significant difference
Chi-Square	Campaign Type × Customer Segment	14.2767	0.5781	No significant difference
Chi-Square	Channel × Campaign Type	17.3612	0.6294	No significant difference

SIGNIFICANT LEVEL = 0.05

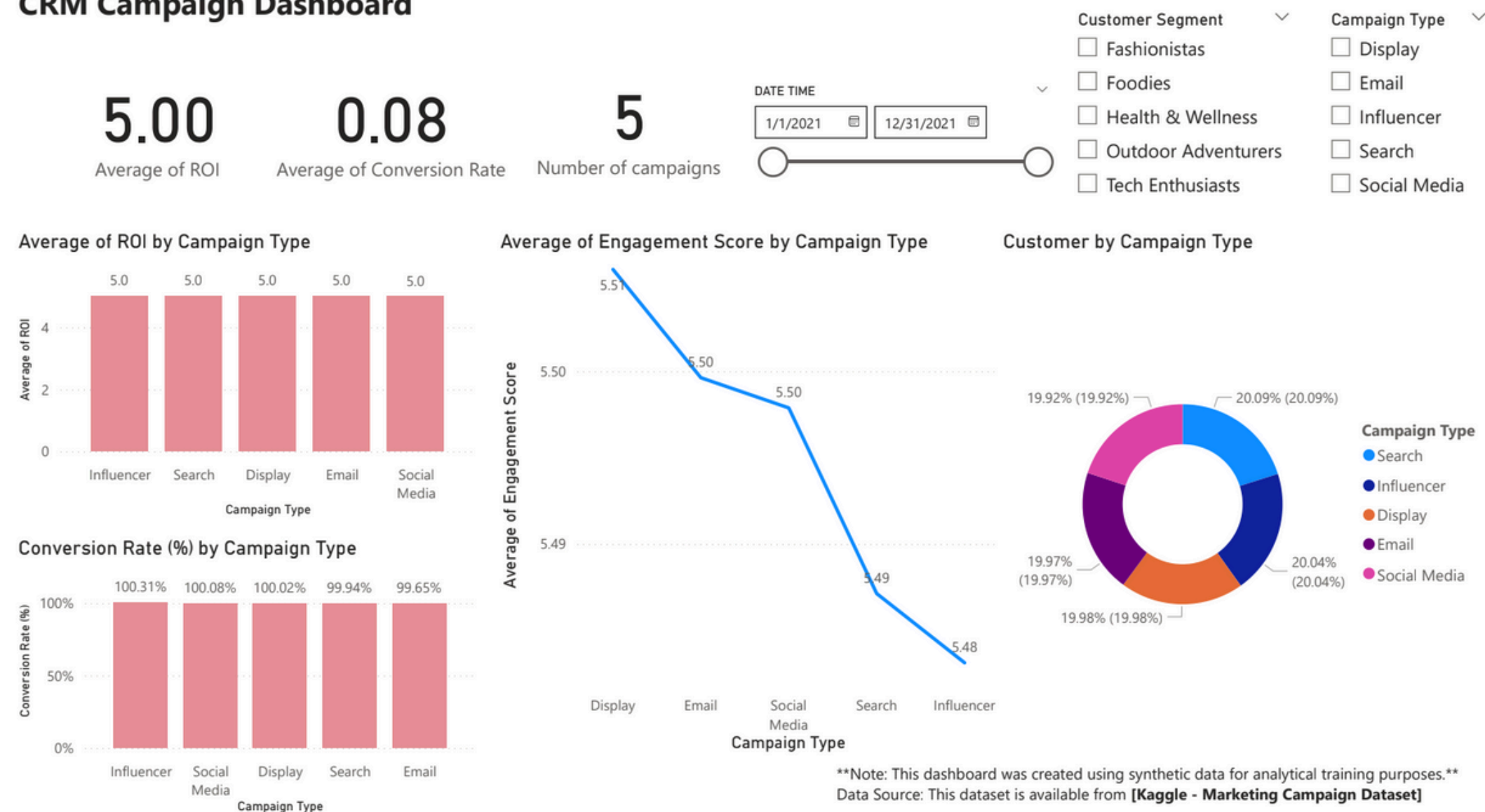
INTERPRETATION

NO STRONG RELATIONSHIP WAS FOUND BETWEEN CATEGORICAL VARIABLES IN THIS DATASET, WHICH REFLECTS THE SYNTHETIC AND BALANCED NATURE OF THE DATA.



CRM CAMPAIGN DASHBOARD

CRM Campaign Dashboard



OVERVIEW

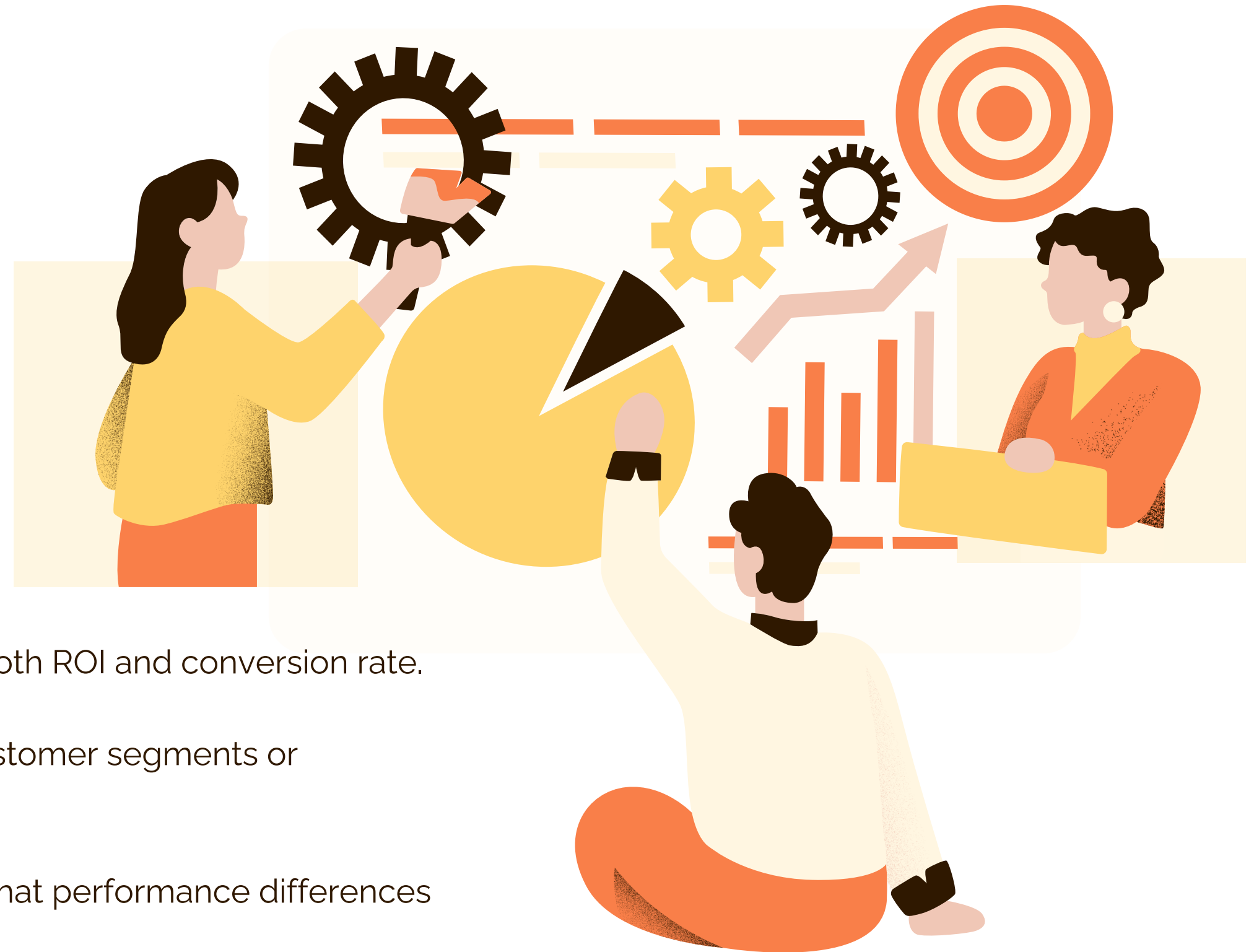
This dashboard provides an overview of marketing campaign performance across different types, focusing on key metrics such as ROI, conversion rate, and engagement score.

Users can filter by campaign type, customer segment, or time period to gain specific insights.

Although the dataset used is synthetic, it reflects how real-world CRM campaign data can be analyzed and visualized effectively using Power BI.

KEY INSIGHTS

- All campaign types showed similar performance in both ROI and conversion rate.
- There were no major differences in results across customer segments or campaign types.
- Statistical tests (ANOVA and Chi-Square) confirmed that performance differences were not significant.
- The dataset was synthetically created but is well-balanced and suitable for practicing CRM analysis and dashboard creation.





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THANK YOU

