

Marketing Campaign Analytics

Executive Summary

PROJECT OVERVIEW

Comprehensive analysis of 2,600 digital advertising campaigns for a Data Analytics Course, spanning January-December 2024. Transformed messy, inconsistent data into actionable insights through systematic data cleaning, advanced analytics, and interactive dashboard development.

BUSINESS IMPACT AT A GLANCE

Metric	Current Performance	Optimization Potential
Total Profit	\$3.15M	+\$450K-\$600K (15-20% increase)
ROAS	6.6x	→ 7.5-8.0x
Campaign Success	91% profitable	→ 95%+
Money Wasted	\$50K+ on losing campaigns Immediate recovery opportunity	
Investment: \$538K → Return: \$4M Revenue → Profit: \$3.15M		

DATA CHALLENGES SOLVED

Cleaned and standardized 2,600 records with:

- 4 campaign name variations → 1 standardized name
- Keyword spelling errors across 3 keywords → Fixed
- 626 missing values → Intelligently handled (0% nulls)
- Mixed date formats (MM/DD/YYYY + DD-MM-YYYY) → Unified
- 9 device capitalization variations → 3 clean categories
- 205 business logic violations (impossible data) → Corrected

Result: 100% clean, analysis-ready dataset

KEY FINDINGS

Device Performance

- **Desktop:** #1 performer - \$1.08M profit, 6.57 ROAS (34% of total)
- **Mobile:** Close second - \$1.05M profit, 6.41 ROAS (34%)
- **Tablet:** Profitable but weakest - \$1.02M profit, 6.37 ROAS (32%)

Keyword Performance

- **"learn data analytics"** = Top contributor (highest ROAS)
- **"analytics for data"** = Weakest performer (still profitable)
- All 6 keywords generating positive returns
- Significant variance = reallocation opportunity

Campaign Efficiency

- **91% campaigns profitable** (2,366 campaigns)
- **9% losing money** (234 campaigns) = immediate optimization target
- Top 10 device-keyword combinations far outperform bottom 10

Temporal Patterns

- Clear day-of-week performance variations
- Identifiable high/low profit days
- Seasonal trends throughout 2024

TOP 3 RECOMMENDATIONS

1. QUICK WIN: Stop the Bleeding

Action: Pause 234 losing campaigns immediately

Impact: Recover \$50K+ wasted spend in 30 days

Effort: Low (1 week)

2. STRATEGIC: Reallocate to Winners

Action: Shift 10-15% from Tablet to Desktop; boost top keywords

Impact: +\$175K-\$225K additional profit

Effort: Medium (2-4 weeks)

3. OPTIMIZE: Target Best Combinations

Action: Focus on top 10 device-keyword pairs, reduce bottom 5

Impact: 12-18% improvement in cost per acquisition

Effort: Medium (4-6 weeks)

PROJECTED ROI

Conservative Scenario (Quick Wins Only)

- **Timeline:** 30 days
- **Additional Profit:** \$115K+
- **ROAS Improvement:** 6.6x → 7.0x
- **Implementation Effort:** Low

Aggressive Scenario (Full Optimization)

- **Timeline:** 60-90 days
- **Additional Profit:** \$450K-\$600K (15-20% increase)
- **ROAS Improvement:** 6.6x → 7.5-8.0x
- **CPA Reduction:** 15-20%
- **Implementation Effort:** Medium

DELIVERABLES

Interactive 5-Page PowerBI Dashboard

- Executive overview with KPIs and trends
- Device performance analysis
- Keyword efficiency matrix
- Device-keyword combination heatmap

- Temporal performance tracking

Clean Dataset Package

- 2,600 records, 18 columns with calculated metrics
- 7 pre-aggregated summary tables
- Full documentation of transformations

Strategic Action Plan

- 6 specific recommendations with timelines
- ROI projections for each initiative
- Risk assessment and confidence levels

Python Analysis Code

- Reproducible data cleaning pipeline
- Feature engineering scripts
- Analysis documentation

BOTTOM LINE

Current State: Strong overall performance (6.6x ROAS) with pockets of inefficiency

Opportunity: \$450K-\$600K in additional profit through strategic reallocation

Next Step: Implement quick wins in Week 1 to demonstrate value immediately

This analysis proves that small, data-driven optimizations to an already successful campaign can yield 15-20% profit improvements without increasing total ad spend.

METHODOLOGY

Data Processing: Python (Pandas, NumPy) | **Visualization:** PowerBI | **Analysis:** Statistical aggregation, cohort analysis, funnel analysis | **Approach:** Exploratory analysis → Data cleaning → Feature engineering → Dashboard development → Strategic recommendations

Analysis based on 2,600 campaign records across 3 devices, 6 keywords, 365 days in 2024.