

# Marketing Campaign Analytics

## Executive Summary

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### 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.

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### BUSINESS IMPACT AT A GLANCE

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

**Investment:** \$538K → **Return:** \$4M Revenue → **Profit:** \$3.15M

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### 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

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## 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

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## 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)

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## 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
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## 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
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### 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.**

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### 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

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