PAID MEDIA SPEND ANALYSIS

Regression Analysis to predict revenue
and understand channel contribution

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MOTIVATION

How can we
understand how paid marketing channels
are **driving revenue** to better **allocate budget**,
identify **optimal spend** levels, and
forecast key metrics?

ASSUMPTIONS

Data Context Assumption

Target: Revenue

Features: Combinations of Paid Media & **Funnel Stages**

Business Priority

Business prioritizing model **interpretability** over predictive power

FEATURES & TRANSFORMATIONS

What features & transformations were considered?

1. **Business**
   - **Aggregating features by platform or funnel**
2. **Control**
   - **Date features (Month, Quarter, End of Quarter, etc.)**
   - **Lag Features (dependent variables)**

1. **Weekly Observations (vs. Daily)**
2. **Achieving Stationarity**
   1. **Log transformation**
   2. **Differencing**
3. **Standardization**

MVP MODEL METHODOLOGY

Model Steps

1. Preprocess Data
   - Log Transformation
   - First Order Differencing
   - Mean Normalization
2. Linear Regression (log-log model)
3. Time Series Split
4. Backwards Feature Elimination
5. Convert Data to Original Scale

Output

Decomposition Chart

Composition Chart

RESULTS

Model	Technique	Score
Linear Regression	Regression	0.0154
Ridge	Regression	0.0152
Random Forest	Regression	0.0159

MVP Model due to interpretability and performance

FUTURE WORK

1. Establish **base model** to identify base revenue levels before paid media contributions

2. Implement r**idge regression** to prevent overfitting

3. Incorporate **Saturation Effect** (i.e., Adstock transformations)

Thank You

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