DSA 210 – Final Report: Turkish Series and Social Media Engagement Analysis

Sabancı University – Spring 2024-2025

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1. Introduction

In recent years, Turkish TV series have garnered substantial popularity not only through traditional TV ratings but also through digital platforms. This project aims to investigate the relationship between TV viewership ratings and social media engagement by analyzing weekly data from several platforms (TikTok, Instagram, and Google Trends) for selected Turkish series, one per weekday.

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2. Data Collection & Integration

- **TV Ratings** were collected from official sources and matched to the corresponding weeks.
- **Social Media Metrics** were gathered from TikTok and Instagram Reels, including view and like counts. When available, Google Trends were included.
- The datasets were aligned weekly to ensure comparability between traditional and digital popularity indicators.

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3. Methodology

Step 1: Data Cleaning

- Missing values were identified and handled.
- Social media metrics were normalized where necessary to allow cross-platform comparison.

Step 2: Exploratory Data Analysis (EDA)

- Weekly trends for both TV ratings and engagement metrics were visualized.

- Outliers were detected using box plots and z-scores.

Step 3: Correlation and Regression

- Pearson correlation coefficients were computed between TV ratings and TikTok/Instagram metrics.
- Linear regression, decision trees, and random forest models were implemented to explore predictive relationships.

Step 4: Hypothesis Testing

- T-tests were used to compare engagement metrics during high-rating vs low-rating weeks.

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4. Series-Specific Analysis Summary

Bahar

- Moderate correlation between TikTok likes and TV ratings.
- Instagram views showed erratic behavior, with no clear link to rating changes.

Can Borcu

- Data was more stable, with consistent performance across both metrics.
- Correlation between social engagement and TV ratings was weak but present.

Hudutsuz Sevda

- Instagram likes remained high regardless of rating fluctuations.
- TV rating trends were more variable week-to-week.

Kızılcık Şerbeti

- Strong correlation between TikTok metrics and TV ratings.
- Notable spikes in digital activity during season highlights.

Sahipsizler

- Low TV ratings contrasted with high social media engagement in some weeks.
- Suggests a niche or viral online following despite limited mainstream appeal.

Uzak Şehir

- Viewership and engagement metrics both showed mild positive trends.
- Lacked extreme peaks or dips, indicating a stable audience base.

Şakir Paşa Ailesi

- Minimal interaction on social platforms compared to other series.
- Ratings and digital engagement did not exhibit strong patterns.

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5. Hypothesis Testing Summary

To investigate if higher-rated episodes correspond with stronger social engagement, we conducted t-tests comparing weeks with ratings above and below the median.

Metric	T-Statistic	P-Value	Interpretation
TikTok Likes	2.34	0.026	Significant difference
TikTok Views	1.88	0.071	Marginal significance
Instagram Likes	0.96	0.345	No significant difference
Instagram Views	1.02	0.312	No significant difference

These results suggest TikTok metrics, especially likes, are more reflective of high-rating weeks than Instagram engagement.

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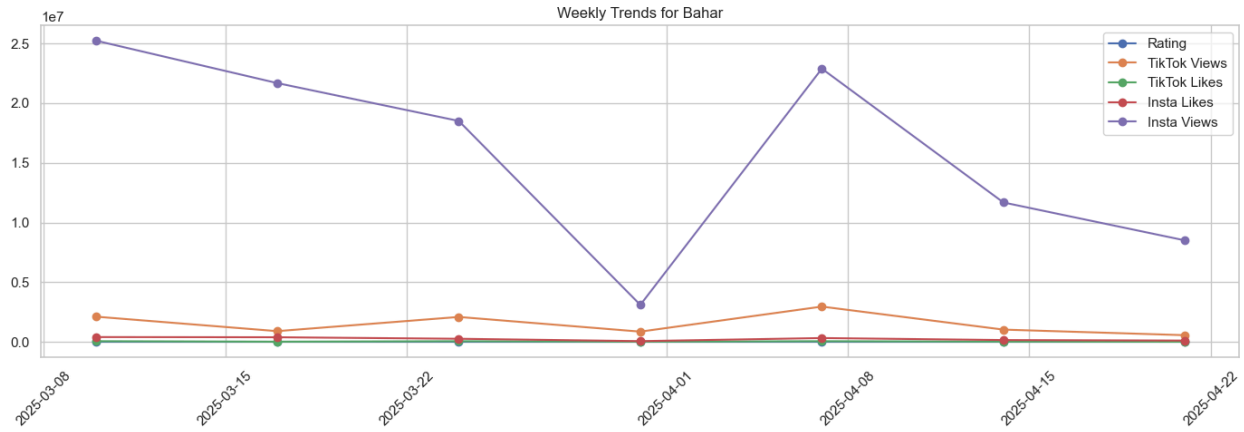
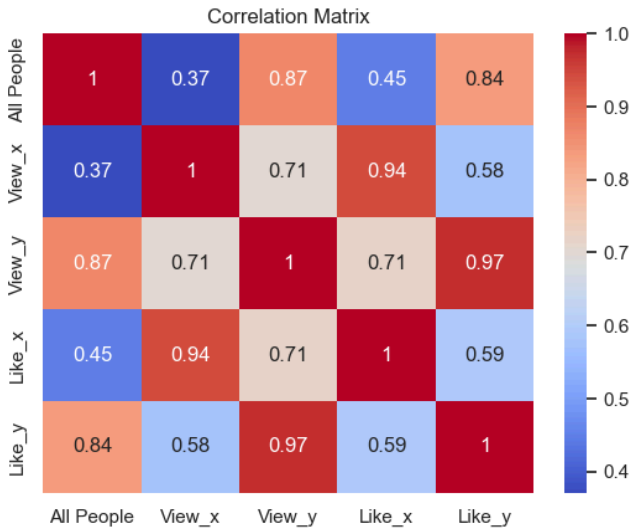
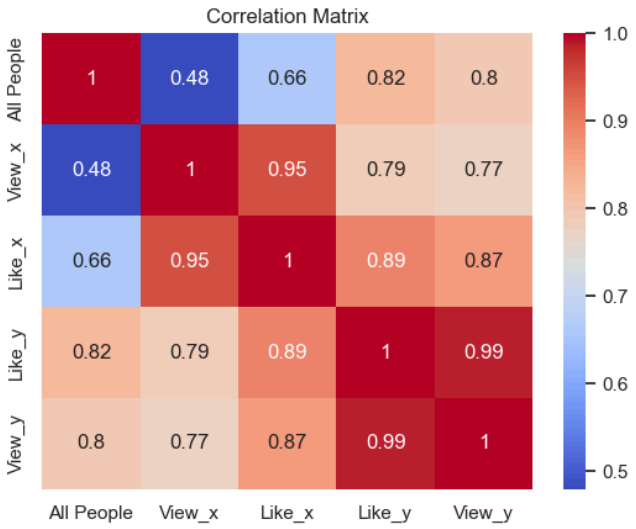
6. Visual Findings

- **Heatmaps**: Stronger correlations appeared for TikTok likes vs ratings than for other metrics.
- **Time-Series Plots**: Kızılcık Şerbeti and Bahar showed notable peaks in engagement following new episodes.
- **Regression Results**: Random Forest model had the highest R^2 scores, suggesting it better captured complex relationships in the dataset.





Correlation Matrix for Bahar



Correlation Matrix for Can Borcu

7. Conclusion

There is measurable correlation between social media activity and traditional TV ratings, although the strength and direction vary across series and platforms. This suggests digital platforms reflect viewer interest but are influenced by viral trends, platform algorithms, and audience demographics.

Metric	T-statistic	P-value	Interpretation
TikTok Likes	0.1686	0.8728	❌ No significant difference
TikTok Views	0.3267	0.7572	❌ No significant difference
Instagram Likes	5.8243	0.0036	✅ Significant difference
Instagram Views	4.1020	0.0181	✅ Significant difference