Project: Unlocking YouTube Channel Performance Secrets

Project Objective

The goal of this project is to **analyze YouTube channel performance** and uncover **business-driven insights** related to revenue, views, engagement, and upload strategy using real-world analytical tools.

Tools Used & Why

Python (Google Colab)

Used for:

- Data loading and inspection
- Data cleaning (date parsing, column standardization, validation)
- Feature engineering
- KPI creation
- Exporting cleaned dataset

  Python allows flexible data cleaning, precise calculations, and reusable logic before visualization.

Excel

Used for:

- Quick sanity checks
- Data understanding

- Validation of totals and trends

  Excel is useful for fast verification and exploratory checks during analysis.

🟢 Power BI

Used for:

- KPI creation using DAX
- Interactive dashboard design
- Visual analytics
- Business storytelling

  Power BI enables interactive dashboards that help stakeholders quickly understand insights and trends.

Data Preparation & Feature Engineering

Cleaning Steps:

- Converted `Video Publish Time` to proper datetime format
- Checked for invalid or negative values (e.g., Views < 0)
- Standardized column names for consistency
- Ensured data integrity before analysis

Derived KPIs Created:

- **Engagement Rate**
- **Revenue per View**
- **Aggregated Revenue & Views**

- **Time-based features (Year, Day of Week)**

These KPIs were added directly to the dataset before visualization.

Key Business Questions Answered

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1. How has revenue changed over time?

Insight:

- Revenue peaked in earlier years and shows a gradual decline in later years.

Business Impact:

- Indicates a need to reassess monetization strategy or content performance in recent years.

Visual Used:

- Line Chart (Revenue by Year)

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2. Which days of the week generate the highest revenue?

Insight:

- Videos uploaded on **Tuesday and Friday** generate higher average revenue.

Business Impact:

- Helps optimize upload scheduling to maximize revenue.

Visual Used:

- Clustered Column Chart (Revenue by Upload Day)

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3. Do higher views always lead to higher revenue?

Insight:

- Higher views generally correlate with higher revenue, but some videos generate less revenue despite high views.

Business Impact:

- Highlights differences in monetization efficiency across videos.

Visual Used:

- Scatter Chart (Views vs Revenue)

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4. How does engagement affect revenue?

Insight:

- High engagement does not always guarantee high revenue.
- Moderate engagement levels often show more consistent revenue.

Business Impact:

- Suggests focusing on content quality and monetization methods, not just engagement metrics.

Visual Used:

- Column / Scatter Chart (Engagement Rate vs Revenue)

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5. What are the overall performance KPIs?

KPIs Displayed:

- Total Revenue
- Total Views
- Total Subscribers
- Average Engagement Rate

Business Impact:

- Provides a quick, executive-level snapshot of channel health.

Visual Used:

- KPI Cards

Dashboard Outcome

The final Power BI dashboard provides:

- Clear KPIs for executives
- Trend analysis for performance tracking
- Actionable insights for content and upload strategy
- Interactive filters for deeper exploration

Conclusion

This project demonstrates an **end-to-end data analytics workflow**:

- Raw data → cleaned dataset → KPIs → interactive dashboard
- Focused on **business questions**, not just visuals
- Uses industry-relevant tools and best practices