■ Bike Sharing Analysis Report

Project Objective

The purpose of this analysis is to understand the usage patterns of the Bike Sharing system, evaluate the impact of time and weather factors, and provide actionable insights for operations and marketing teams.

Key Findings

- Daily and weekly trends show strong seasonality with peaks in mid-year and drops towards early 2013.
- Hourly analysis reveals strong demand at commuting hours (7–9 AM and 5–7 PM).
- Weekday usage is higher than weekends, confirming strong work-related demand.
- Weather has a significant effect: rentals are highest on clear days and lowest in bad weather.
- Temperature shows a positive relationship with rentals, while humidity and windspeed have weaker impact.
- Registered users dominate the platform, but casual users still represent a meaningful share.
- Holiday rentals are significantly lower than non-holidays, highlighting work-related usage.

Recommendations

- Increase bike availability during peak commuting hours.
- Allocate more resources in high-demand seasons (3 & 4).
- Use weather forecasts to plan bike distribution and promotional offers.
- Target casual users with marketing campaigns to increase registrations.
- Leverage demand patterns by weekday for efficient resource planning.
- Develop predictive models to anticipate demand using time and weather factors.

Tools Used

SQL was used for data extraction, Python (Pandas, Matplotlib, Seaborn) for data analysis and visualization, and Power BI for dashboard creation. GitHub was used for documentation and project sharing.

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