📊 Research Plan: Supplier Analysis for Amazavr
Candidate: Biljana Jüngling
Position: Junior Data Analyst
Company: Webeet.io (Project: Amazavr)
Focus Area: Supplier Analysis
Dataset: amazavr_inventory (March 2023 – October 2024)

1. Research Objectives

The main goal of this analysis is to evaluate supplier performance and identify areas for improvement in supplier relationships, quality control, and operational efficiency.
Key objectives include:
*Identify suppliers with the highest defect rates
*Determine the most and least reliable suppliers based on dependency scores and stock fulfillment
*Analyze the impact of supplier performance on monthly sales and revenue
*Assess the cost-efficiency of each supplier (e.g. storage costs, unit prices, discounts)
*Provide actionable recommendations for improving supplier management

2. Key Questions to Explore

*Which suppliers have the highest number of defective units over time?
*Is there a correlation between supplier dependency and sales performance or stock availability?
*Which suppliers consistently maintain high stock levels with low storage costs?
*How does the discount_percent vary across suppliers, and what effect does it have on monthly revenue?
*Which supplier-product combinations exceed or fall below the reorder level frequently?
*Are there seasonal trends in supplier performance?

3. Analytical Approach

Step 1: *Data Exploration Inspect dataset for missing values, outliers, or data inconsistencies
*Check data types and convert date strings (e.g., month) into usable formats

Step 2: *Data Cleaning Normalize supplier names if necessary
*Handle missing or unusual values in key columns (e.g., units_defective, discount_percent)

Step 3: KPI Development

*Defect Rate = units_defective / monthly_sales
*Stock Reliability Index = (stock_quantity - reorder_level)
*Dependency Score Analysis = average supplier_dependency per supplier
*Cost-Efficiency Metric = monthly_revenue / (unit_price * stock_quantity + storage_cost_per_unit * stock_quantity)

Step 4: Grouped Analysis Aggregate KPIs at the supplier level (monthly or overall) Use SQL window functions or group by supplier to compare trends Optional: Create supplier rankings

Step 5: Visual Insights Charts/Tables showing:
Top 5 most efficient suppliers Defect rates by supplier Monthly trends of revenue vs. supplier_dependency Correlation between discount and revenue uplift

Step 6: Conclusions & Recommendations Identify high-performing vs. low-performing suppliers Recommend strategies to improve relationships or replace poor-performing suppliers Suggest policies for discount negotiations or reorder triggers