Final Project Decomposition

Project description:

AtliQ Hardware is one of the leading computer hardware producers in India, and has even expanded into other countries as well. They sell different types of hardware to big players such as Amazon, Best Buy, and Walmart. This year, they're asking PWC to conduct a big audit of their sales and help them automate their existing data. AtliQ Hardware wants to understand its financial performance across different product categories, markets, and time periods.

The goal of this research is to analyze revenue, profitability, and margin trends to provide insights into financial stability and growth opportunities. (Financial Analysis)

Research questions:

Revenue and Profitability Trends

- How have revenues and profits changed over time?
- What are the most and least profitable product categories?

Cost vs. Price Analysis

- How do manufacturing costs compare to gross prices over time?
- Are there product categories with declining or increasing margins?

Seasonality and Market Trends

- Are there seasonal patterns in sales and profitability?
- Which markets contribute the most to revenue and profit?

Hypotheses:

H1: Revenue has increased over the years.

H2: Certain product categories have significantly higher profit margins than others.

H3: The increase in manufacturing cost does not always correlate with an increase in selling price.

H4: There is a seasonal pattern in sales, with specific months driving more revenue.

Data sources and key metrics:

Datasets

- *fact_sales_monthly*: Sales volume and customer transactions.
- *fact_gross_price*: Gross price of products over time.
- *fact_manufacturing_cost*: Cost of producing each product.
- *dim_product*: Product category, segment, and variant information.
- *dim_customer*: Market segmentation and customer platform details.

Key Metrics

- Revenue: *sold_quantity * gross_price*
- Profit: *gross_price - manufacturing_cost*
- Profit Margin: *(Profit / Gross Price) * 100*
- Year-over-Year Growth: Revenue and Profit comparison per year.
- Category-wise Profitability: Margin differences across product categories.
- Seasonality Index: Average monthly sales variation.

SQL Queries & Statistical Tests:

Revenue & Profit Trends

- SQL Query: Aggregate revenue and profit by year.
- Visualization: Line chart of revenue/profit trends.
- Statistical Test: Linear regression to model growth trends.

Profitability by Product Category

- SQL Query: Group by category, compute revenue, cost, and profit margins.
- Visualization: Bar chart comparing category margins.
- Statistical Test: ANOVA to test category-wise margin differences.

Cost vs. Price Analysis

- SQL Query: Compare manufacturing_cost and gross_price across years.
- Visualization: Scatter plot for correlation analysis.
- Statistical Test: Pearson’s correlation coefficient.

Seasonality Analysis

- SQL Query: Monthly revenue trend analysis.
- Visualization: Heatmap for seasonal sales patterns.
- Statistical Test: Chi-square test for seasonality significance.

Dashboard Plan (Tableau)

- Revenue & Profitability Overview**:** Line charts for yearly trends.
- Category Profitability Analysis: Bar charts for top-performing categories.
- Cost vs. Price Trends: Scatter plot comparison.
- Seasonal Sales Trends**:** Heatmap showing high and low demand months.

Expected Outcomes

- Identify the most and least profitable product categories.
- Understand revenue and margin trends over time.
- Provide actionable insights into pricing and manufacturing costs.
- Discover seasonal fluctuations in revenue and profitability.