Project Plan for AtliQ Hardware Financial Analysis

I initially downloaded the entire database using 'SELECT *' because, as we later observed, it constituted only a small portion of the full database. However, moving forward, I'll employ more precise SQL queries as necessary to comply with the project's guidelines

Data Preparation & Understanding

- Review the data structure and interconnections.
- Clean and standardize data for analysis.
- Check logic and data completeness.
- Update the database, especially the 'dim' tables, if necessary.

Exploratory Analysis

- Analyze total revenue and margins over time.
- Identify major categories, products, and top customers.
- Explore geographical distribution across regions.

Financial Metrics & Trends

- Calculate key financial metrics (e.g., profit margins).
- Analyze sales trends using time series methods.

Market Comparative Study

- Compare sales and profitability across markets.
- Identify unprofitable clients or products.
- Identify potential growth areas.

Visualization & Recommendations

- Create visuals summarizing insights.
- Develop a dashboard for further monitoring.

Possible Hypotheses to Investigate:

Seasonal Trends:

- Hypothesis: Sales and profits might show significant seasonal patterns, peaking during certain months or seasons.

Platform and Channel Impact:

- Hypothesis: E-commerce sales might demonstrate higher profitability compared to brick-and-mortar stores due to consumer behaviors.

Product Category Influence:

- Hypothesis: Certain product categories, such as 'Notebook', may contribute significantly to overall profits.

Geographic Impact:

- Hypothesis: Markets in specific regions or sub-zones might exhibit varying levels of profitability or growth potential.

Effect of Pre-Invoice Discounts:

- Hypothesis: Higher pre-invoice discounts could correlate with increased sales volume but potentially lower profit margins.

Manufacturing Cost vs. Gross Price Impact:

- Hypothesis: Higher manufacturing costs might not always translate to higher gross prices and profits, suggesting inefficiencies in pricing or production.

Channel Influence:

- Hypothesis: Certain customer channels might consistently generate higher profits due to negotiated terms or preferences.

Long-Term Profitability Shifts:

- Hypothesis: There could be identifiable shifts in long-term profitability trends, indicating changing market dynamics or product preferences.

Tools:

1. Utilized DBeaver to assess the database for potential volume reduction via the 'VACUUM' command.
2. Initially retrieved the entire database into a Pandas dataframe using 'SELECT *', recognizing it represented only a fraction of the complete database. Subsequently, I intend to utilize more precise SQL queries in line with project guidelines. All preprocessing tasks will be executed using Pandas.
3. Employing Pandas, along with Plotly and other statistical libraries, for Exploratory Data Analysis (EDA) and hypothesis testing.
4. Employ Tableau Public to craft a dashboard for ongoing monitoring and visualization.