Decomposition Plan

Objective: Conduct a comprehensive audit of tliQ Hardware's sales data, focusing on Financial Analysis and Revenue/Profit/Margin Change Research.

1.Research Questions:

* How have revenue and profits changed over time for tliQ Hardware?
* What factors have contributed to changes in revenue and profits?
* What categories of products are the most profitable?
* How has the market shifted over time?

Hypotheses:

* H1: There is a positive correlation between marketing expenditures and revenue.
* H2: Profit margins have improved over the past year due to cost optimization.
* H3: Certain product categories contribute significantly to overall profits.

Tools and Methods:

1. SQL: To extract and preprocess data from the database.
2. Pandas: For data manipulation and analysis in Python.
3. Tableau: For data visualization and interactive dashboards.
4. Statistical Analysis: To test hypotheses and identify key drivers.

2.Decomposition Steps:

2.1 **Data Retrieval and Preprocessing:**

* Connect to the database using SQLite.
* Join the tables from the dim\_customer, dim\_products, fact\_pre\_discount, fact\_manufacturing\_cost, and fact\_gross\_price tables into one dataframe.
* Handle missing values, duplicates, and data type conversions.

2.2 **Exploratory Data Analysis (EDA):**

1. Perform exploratory data analysis to understand data distributions.
2. Visualize trends in revenue, profits, and profit margins over time.
3. Identify outliers or anomalies in the data.

2.3 **Data Transformation:**

* Merge relevant tables to create a comprehensive dataset for analysis.
* Calculate profitability metrics (e.g., profit margin) based on available data.
* Create additional features if needed.

2.4 **Hypothesis Testing:**

* Conduct hypothesis tests to validate or reject the 3 hypotheses related to revenue and profitability.
* Use statistical tests and confidence intervals.

2.5 **Customer Segmentation:**

* Segment customers based on their purchase behavior, geography, or other relevant factors.
* Analyze the behavior and profitability of different customer segments.

2.6 **Data Visualization:**

1. Create interactive dashboards in Tableau to present key findings.
2. Visualize revenue and profit trends, customer segments, and product category insights.

2.8 **Documentation and Reporting:**

* Prepare a structured report with key insights, visualizations, and recommendations.

2.9 **Presentation:**

Present findings and recommendations to stakeholders using Power point with Tableau Dashboard