Kimia Farma Business Performance Evaluation (2020–2023)

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Project Documentation

***Abstract*—This document presents a detailed technical and business documentation of an end-to-end analytics project for PT Kimia Farma Tbk, covering 2020–2023 performance. The project integrates transactional, product, and branch data into a unified BigQuery analysis table and delivers interactive dashboards in Looker Studio. The implemented solution addresses metric standardization, tiered gross margin modeling, branch-level experience diagnostics, and geographic profitability visibility. Results show high revenue concentration in core provinces, signs of year-over-year growth stagnation, and specific operational service gaps requiring intervention. This documentation outlines the architecture, transformation logic, analytics strategy, dashboard design, and forward roadmap in a conference-grade structure.**

***Index Terms*—Business analytics, data engineering, Google BigQuery, Looker Studio, profitability analysis, healthcare retail, ELT pipeline**

I. Introduction

PT Kimia Farma Tbk operates a large nationwide pharmaceutical network in Indonesia. Prior analytical reporting was fragmented across separate datasets, limiting management's ability to monitor profitability and service quality consistently.

This project was conducted to provide a single analytical framework for monitoring business performance from January 1, 2020 through December 31, 2023. The solution combines data engineering and business intelligence to enable both executive-level KPI tracking and detailed branch diagnostics.

II. Business Context and Objectives

A. Problem Statement

The organization faced three key issues:

- Difficulty calculating net profitability due to tiered margin rules tied to product price bands.
- Limited visibility into mismatches between branch operational quality and transaction experience.
- Weak geographic insight into province-level profit contribution and concentration risk.

B. Project Objectives

The project objectives were as follows:

1) Integrate multiple raw datasets into a reliable analytical model.
2) Implement reproducible SQL logic for `nett_sales` and `nett_profit`.
3) Surface top-performing and at-risk regions/branches.
4) Deliver an interactive dashboard for drill-down analysis.

III. Data Sources and Scope

A. Source Tables

Four datasets were provided:

- Transaction table: transaction-level operational records.
- `kf_product`: product master and price context.
- `kf_kantor_cabang`: branch metadata, city/province, and branch ratings.
- `kf_inventory`: stock context for future analytics expansion.

B. Analytical Scope

- **Time period:** 2020–2023.
- **Geography:** all active Indonesian branches.
- **Granularity:** transaction line-item level.

IV. Architecture and Pipeline

A. ELT Design

A cloud-native ELT design was used:

1) **Extract/Load:** CSV sources loaded into BigQuery staging.
2) **Transform:** SQL joins, normalization, and calculated metrics.
3) **Serve:** `analysis_table` consumed by Looker Studio.

B. Join Strategy and Quality Controls

- Inner joins between transaction, product, and branch entities to preserve valid business records only.
- Explicit numeric casting for stable financial computations.
- Defensive `CASE` branch for unexpected values (`ELSE 0.0`).

V. Metric Engineering

A. Derived Metrics

- **Nett Sales:**

$$\text{nett\_sales} = \text{price} \times (1 - \text{discount\_percentage}) \quad (1)$$

- **Gross Margin Percentage:** tiered by product price.
- **Nett Profit:**

$$\text{nett\_profit} = \text{nett\_sales} \times \text{persentase\_gross\_laba} \quad (2)$$

TABLE I
GROSS MARGIN RULES BY PRICE BAND

Price Range (IDR)	Margin
$\leq$ 50,000	10%
50,001–100,000	15%
100,001–300,000	20%
300,001–500,000	25%
$>$ 500,000	30%

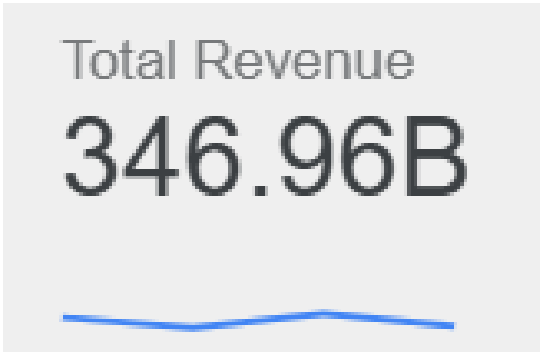

Fig. 1. Total Revenue Scorecard

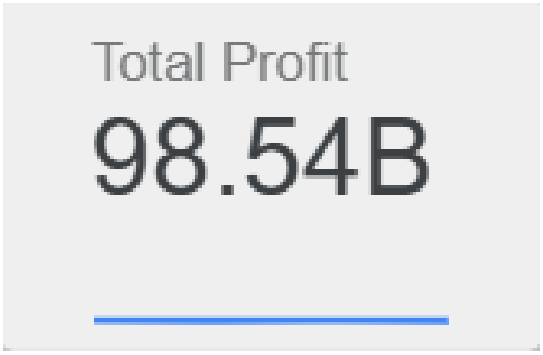

Fig. 2. Total Profit Scorecard

B. Tiered Margin Logic

VI. Dashboard Design and Analytical Outputs

The Looker Studio dashboard supports executive monitoring and operational diagnosis through KPI cards, trend analysis, ranking views, geographic mapping, and quality-gap detection.

A. Executive KPIs

Scorecards summarize total revenue, total profit, total transactions, and average transaction rating for rapid status checks.

B. Temporal and Regional Views

The year-over-year trend highlights growth behavior and possible stagnation patterns in later years.

Regional concentration is assessed with province ranking charts.

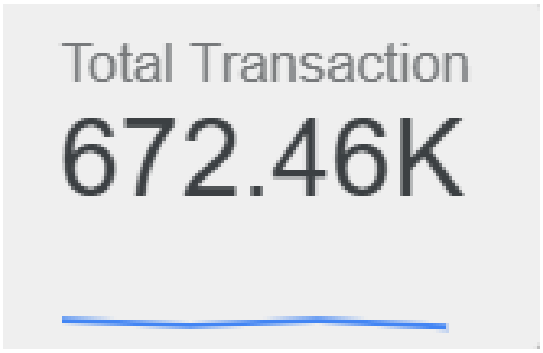

Fig. 3. Total Transactions Scorecard

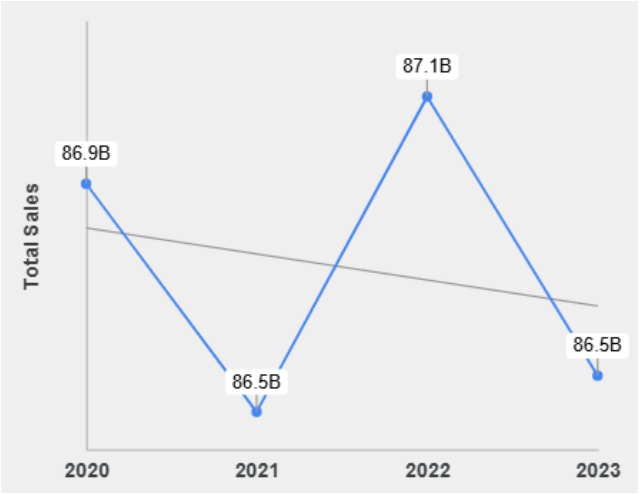

Fig. 4. Year-over-Year Sales Trend

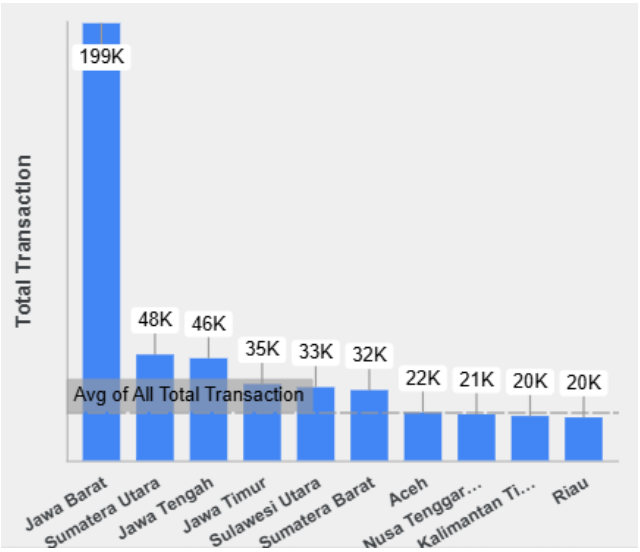

Fig. 5. Top 10 Provinces by Transactions

C. Service Gap and Profitability Diagnostics

Scatter analysis compares branch-rating versus transaction-rating to detect process weaknesses despite acceptable branch

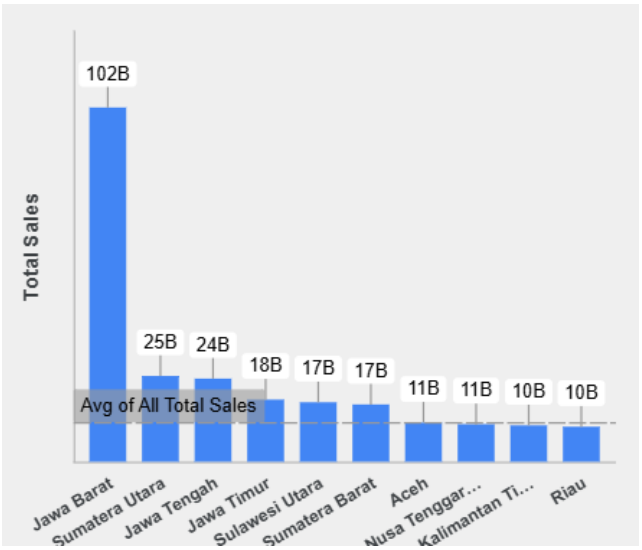

Fig. 6. Top 10 Provinces by Nett Sales

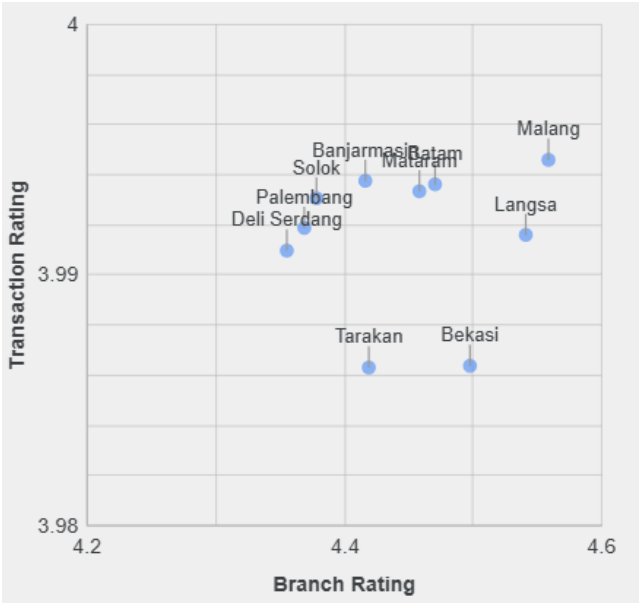

Fig. 7. Branches with Lowest Transaction Experience Ratings

perception.

Geographic profit map reveals core and emerging market contributions.

VII. Key Findings

- Revenue and transaction value are strongly concentrated in major provinces, with West Java as a dominant contributor.
- Year-over-year performance exhibits volatility and signs of flattening toward 2023, requiring growth-risk mitigation.
- A subset of branches shows high branch ratings but lower transaction ratings, indicating queue, POS, or front-line service bottlenecks.

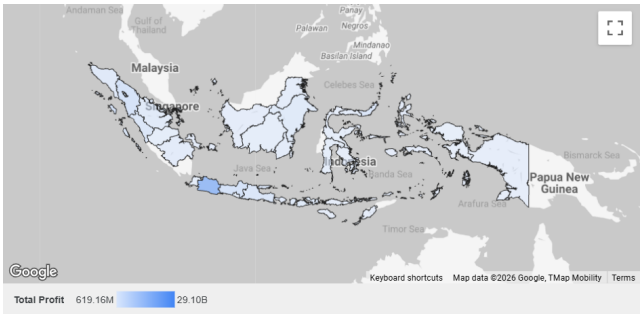

Fig. 8. Profit Contribution by Province

- Eastern region branches contribute lower net profit, suggesting review of logistics cost structure and local commercial strategy.

VIII. Recommendations

1) **Protect Core Markets:** improve demand planning and distribution efficiency in top-contributing provinces.
2) **Fix Experience Gaps:** prioritize operational audits and SLA controls in outlier branches.
3) **Rebalance Region Economics:** evaluate routes and margin strategy in low-profit provinces.
4) **Advance Analytics:** integrate inventory to quantify stock-out impact and implement short-term revenue forecasting.

IX. Conclusion

This project demonstrates a practical data-to-decision implementation for retail healthcare analytics. By constructing a governed analysis table in BigQuery and an interactive dashboard in Looker Studio, the solution enables consistent performance measurement, branch-level diagnosis, and strategy-oriented action planning. The resulting documentation and artifacts form a reusable foundation for future predictive and optimization initiatives.