

Kimia Farma Business Performance Analysis

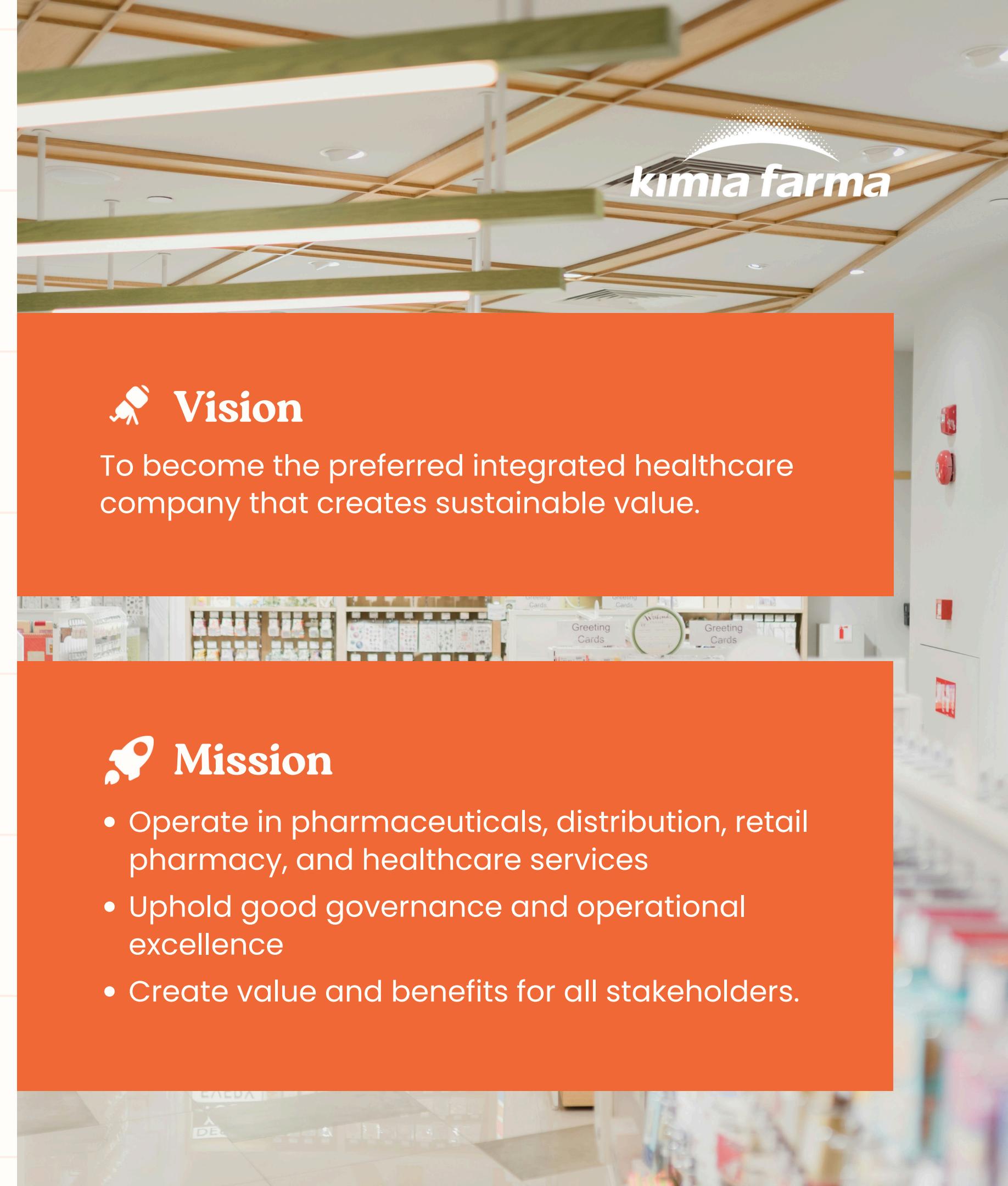
by: Az-Zukhrufu Fi Silmi Suwondo



Project-Based Internship – Big Data Analyst
Kimia Farma x Rakamin Academy

About Company

Kimia Farma is Indonesia's first pharmaceutical company, established in **1817**. Today, it has grown into an **integrated healthcare company** providing **end-to-end services**, from pharmaceutical manufacturing and distribution to retail pharmacies, clinical laboratories, and health clinics. Kimia Farma is **part of PT Bio Farma (Persero)**, the state-owned pharmaceutical holding.



kimia farma

Vision

To become the preferred integrated healthcare company that creates sustainable value.

Mission

- Operate in pharmaceuticals, distribution, retail pharmacy, and healthcare services
- Uphold good governance and operational excellence
- Create value and benefits for all stakeholders.

Project Overview



! Problem

Kimia Farma needs an **integrated analysis** of its **2020–2023 business performance**. Dispersed data makes it hard to **track sales, profit, and customer satisfaction**, highlighting the need for a **unified, data-driven dashboard**.

Goal

Analyze and **visualize** Kimia Farma's **business performance** using **BigQuery** and **Looker Studio**.

Objectives

- Consolidate four datasets into a **single analytical table**
- Create an **interactive performance dashboard**
- Derive **actionable insights** to inform strategic decisions

Methodology & Tech Stack



Data Sources Overview

- Transactions:** Final transactions data
- Products:** Medicine catalog
- Inventory:** Stock management
- Branches:** Office locations

Technology Stack

- Google Cloud:** Cloud infrastructure
- BigQuery:** Data warehouse & SQL
- Looker Studio:** Dashboard & reporting
- Github:** Version control

Data Processing Overview

Data Integration

The analysis table is built by **merging four datasets via LEFT JOINs**, using kf_final_transaction as the **primary table**. It enriches transactions with **branch details** (name, city, province, rating) from kf_kantor_cabang, **product details** (name, actual_price) from kf_product, and **stock data** from kf_inventory when required. LEFT JOINs ensure **all transactions are retained** even if reference data is missing.

Business Rule Implementation

Gross Profit Percentage

 The profit margin applied based on product price tiers.

$$[\text{Gross Profit\%} = \begin{cases} 10\%, & \text{if } \text{Price} \leq 50,000 \\ 15\%, & \text{if } 50,000 < \text{Price} \leq 100,000 \\ 20\%, & \text{if } 100,000 < \text{Price} \leq 300,000 \\ 25\%, & \text{if } 300,000 < \text{Price} \leq 500,000 \\ 30\%, & \text{if } \text{Price} > 500,000 \end{cases}]$$

Nett Sales

 Sales value after applying discounts.

$$[\text{Nett Sales} = \text{Actual Price} \times (1 - \text{Discount\%})]$$

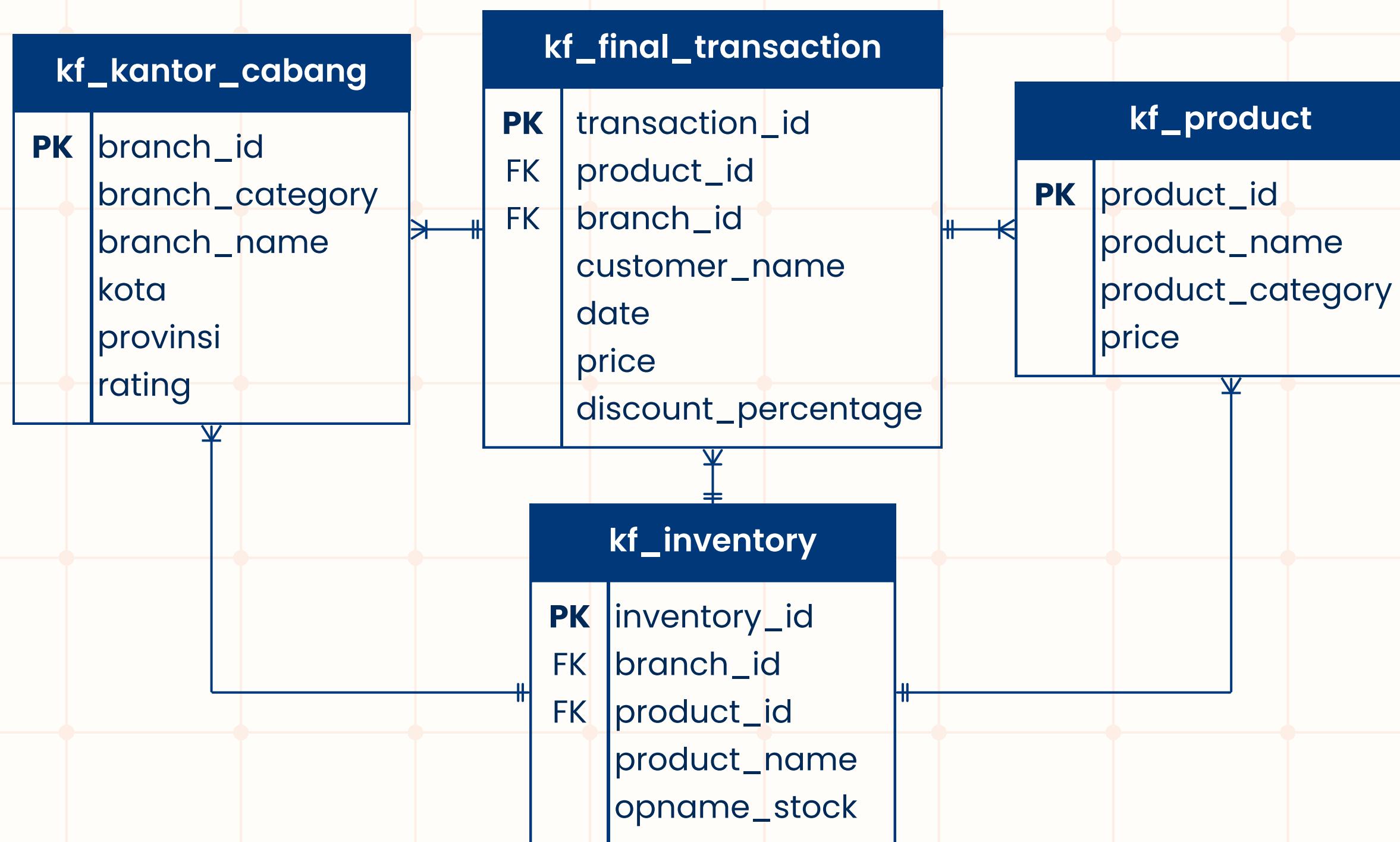
Nett Profit

 Net profit per transaction after applying the margin to nett sales.

$$[\text{Nett Profit} = \text{Nett Sales} \times \text{Gross Profit\%}]$$

[Source Code](#) 

Entity Relationship Diagram



How The Tables Connect

- Branch → Transaction**
Each branch records all sales made at that location
- Product → Transaction**
Each product tracks every time it was sold
- Branch → Inventory**
Each branch manages its own stock of products
- Product → Inventory**
Each product shows which branches have it in stock

Unified Analytics Table

Successfully **merged 650K+ transactions** (2020–2023) from **four operational datasets** into a unified analytical table. Each transaction is now enriched with **branch intelligence** (location, ratings), **product specifications** (name, pricing), and **calculated financial metrics** (nett sales, profit margins), maintaining 100% data integrity with zero record loss. This consolidated foundation enables **multi-dimensional business performance analysis** across products, regions, and time periods.

transaction_id	date	branch	branch_name	kota	provinsi	rating_customer	customer	product_id	product_name	actual_price	discount	percentage_discount	nett_sales	nett_profit	rating_transaction
TRX5844188	9/7/2023	88605	Kimia Farm	Sukabumi	Jawa Barat	4.7	Elizabeth Thorne	KF260	Other analgesic	118,700	0.05	0.2	112765	22553	3
TRX6182886	11/7/2023	27840	Kimia Farm	Denpasar	Bali	4.3	Andrew McDonald	KF492	Psycholeptic	751,900	0.07	0.3	699267	209780.1	4.8
TRX7691180	5/30/2023	62913	Kimia Farm	Palembang	Sumatera Selatan	4.5	Charles Reynolds	KF540	Other analgesic	744,200	0.03	0.3	721874	216562.2	3.3
TRX3205743	11/28/2023	31604	Kimia Farm	Pontianak	Kalimantan	4.4	Casey Cohen	KF389	Drugs for pain	761700	0.06	0.3	715998	214799.4	3.5
TRX3644533	5/28/2023	20322	Kimia Farm	Subang	Jawa Barat	4.1	Rebecca Martin	KF854	Drugs for pain	681000	0.13	0.3	592470	177741	4.1

Dataset Repository 

Performance Dashboard Suite



Strategic Executive Dashboard

Company-wide performance overview: revenue, profit, top products, and regional insights



Branch Performance Dashboard

Individual branch operations: daily sales, customer feedback, and profitability analysis



Comprehensive Analytics Dashboard

Advanced analytics with anomaly detection, customer insights, and efficiency metrics

Explore Interactive Dashboards

Click to view live dashboards in Looker Studio

[View Dashboard](#)

Strategic Executive Dashboard

Purpose & Audience

 This dashboard serves **C-level executives** and **board members** who require a **consolidated view of organizational performance for strategic decision-making**. It addresses the fundamental question: "Is the business on track to meet its objectives?"

Critical Performance Indicators

Total Revenue

- Measures top-line growth and market penetration effectiveness
- Percentage from target indicates performance relative to strategic goals

Total Profit

- Validates operational efficiency and cost management
- Confirms sustainable profitability trajectory

Average Gross Margin

- Indicates pricing power and cost structure health
- Benchmark for operational excellence

Average Transaction Rating

- Proxy for customer satisfaction and service quality
- Leading indicator for customer retention and brand perception

Business Context

 In executive meetings, this dashboard enables **rapid assessment of business health within 30 seconds**. Performance deviations from targets **trigger immediate delegation to relevant departments** for deeper investigation, **facilitating agile decision-making** without requiring granular detail at the executive level.

Strategic Executive Dashboard

Monthly Sales & Profit Trend (Time Series)

- Tracks revenue and profit evolution over 4-year period for pattern recognition
- Enables identification of growth trajectories, seasonal cycles, and structural breaks

Geographic Performance Analysis

- Ranks provinces by revenue and transaction volume to identify market concentration
- Guides resource allocation and expansion planning decisions

Product Portfolio Performance (Top Products)

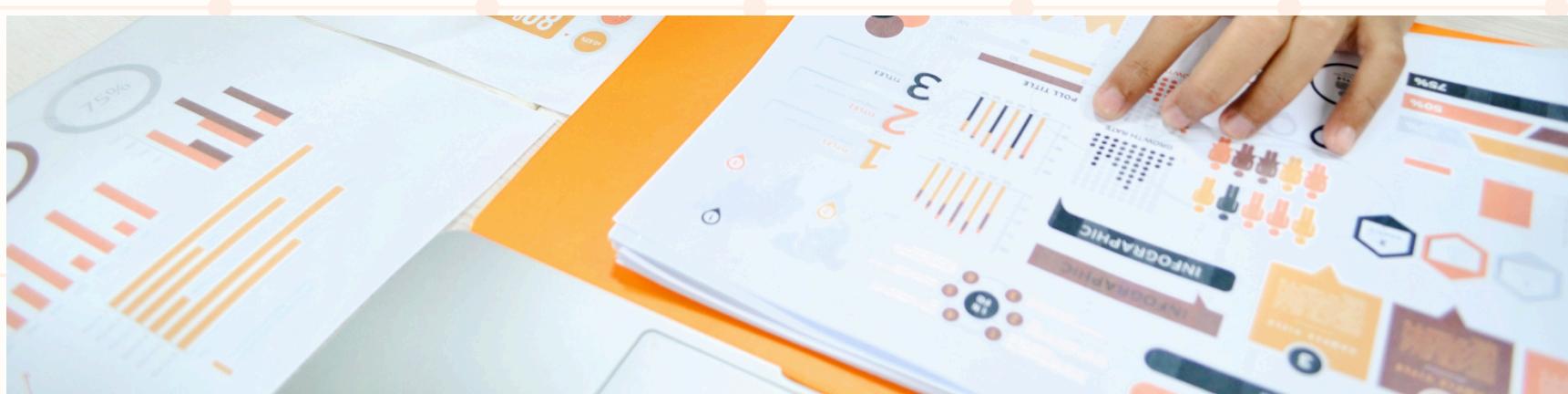
- Lists highest-performing SKUs with quantity, sales, and profit metrics
- Reveals product category dominance for supply chain and category investment priorities

Branch Type Revenue Comparison

- Compares total sales across operational formats (Apotek, Klinik-Apotek, Klinik-Apotek-Lab)
- Validates business model effectiveness to inform expansion format selection

Category Profitability Analysis

- Displays profit contribution by therapeutic product category
- Identifies which categories drive bottom-line performance for marketing focus



Branch Performance Dashboard

Purpose & Audience

 Designed for **regional managers** and **branch supervisors** managing multiple locations. This dashboard represents a **drill-down from strategic to tactical level**, enabling **detailed performance analysis of individual branches** for operational troubleshooting and optimization.

Critical Performance Indicators

Total Revenue

- Displays absolute value with month-over-month percentage change
- Enables rapid identification of growth acceleration or deceleration

Total Profit

- Shows profitability with MoM comparison
- Validates whether revenue growth translates to profit growth

Total Transactions

- Transaction count with MoM percentage
- When combined with revenue, reveals average transaction value trends

Transaction Rating

- Service quality metric with MoM change
- Early warning system for customer satisfaction deterioration

Branch Rating

- Overall branch performance score
- Composite metric for branch health assessment

Use Case Scenario

 When the strategic dashboard reveals **regional underperformance**, managers utilize this dashboard to **systematically analyze individual branches**, isolating **specific locations driving the variance**. The filtering capability allows sequential examination of branches to **identify patterns or outliers** requiring intervention.

Branch Performance Dashboard

Daily Sales & Profit Trend

- Day-by-day observation enabling identification of specific date anomalies
- Pinpoints operational issues to exact dates for immediate investigation

Top Customer Feedback

- Individual customer transactions with dates, ratings, and values
- Enables VIP customer recognition and service recovery for low ratings

Discount & Profitability Scatter

- Plots relationship between discount percentage and resulting profit
- Validates pricing guidelines and detects unauthorized discounting

Performance by Day of Week

- Aggregates transactions and sales across weekdays
- Supports staff scheduling optimization and promotional timing

Transaction Rating Distribution

- Histogram showing frequency across rating ranges
- Identifies whether low ratings are outliers or systematic service issues

Product Performance Table

- Lists top product types at branch level with sales, quantity, & ratings
- Guides inventory management and staff training priorities

Customer Metrics

- Displays total unique customers and transaction count
- Reveals customer acquisition versus retention effectiveness

Comprehensive Analytics Dashboard

Purpose & Audience

 Serves **data analysts, business intelligence teams, and strategy departments** requiring multi-dimensional exploratory analysis capabilities. This dashboard addresses **complex research questions demanding sophisticated analytical techniques** beyond operational monitoring.

Analytical Hierarchy

Level 1 - Strategic Dashboard: Answers "What is happening?"

- Describes overall business performance state
- Aggregated view across entire organization

Level 2 - Branch Dashboard: Answers "Where specifically is it happening?"

- Isolates specific locations or segments
- Single-branch focused analysis

Level 3 - Comprehensive Dashboard: Answers "Why is it happening and what are the relationships?"

- Investigates root causes through multi-variable analysis
- Cross-dimensional exploration and pattern discovery

Analytical Workflow

 Enables **exploratory analysis** through **multi-dimensional filtering** (Province, City, Branch Type, Product Type) and **variable relationship examination**. Designed for **hypothesis testing** and **pattern discovery** beyond predetermined metrics.

Comprehensive Analytics Dashboard

Anomaly Detection Table

- Identifies branches with unusual metric combinations using statistical deviation
- Flags locations requiring audit, compliance review, or best practice documentation

Product Performance Matrix

- Portfolio analysis plotting sales volume against margin percentage in quadrants
- Supports product mix optimization and category investment decisions

Discount & Profitability Analysis

- Two simultaneous views examining profit vs. discount and margin vs. discount
- Provides empirical evidence for optimal discount ranges and policy authorization levels

Branch Efficiency Quadrant

- Matrix categorizing branches by sales (X-axis) and margin percentage (Y-axis)
- Identifies branches for investment, replication, improvement, or potential closure

Customer Lifetime Value Analysis

- Scatter plot segmenting customers by transaction frequency and total value
- Guides differentiated customer treatment and retention investment priorities

Geographic Heatmap

- Interactive map showing branch locations with performance indicators
- Reveals market penetration density and white space opportunities for expansion

Strategic Insights



The dashboard infrastructure provides comprehensive visibility into **operational performance** across **650K+ transactions** spanning **2020–2023**. However, monitoring capabilities alone do not drive strategic value. Systematic analysis of this dataset reveals seven critical patterns:



Truth #1

We're not
growing (0%
vs Kalbe's 7%)



Truth #2

Our discounts
destroy profit
(-14.8%)

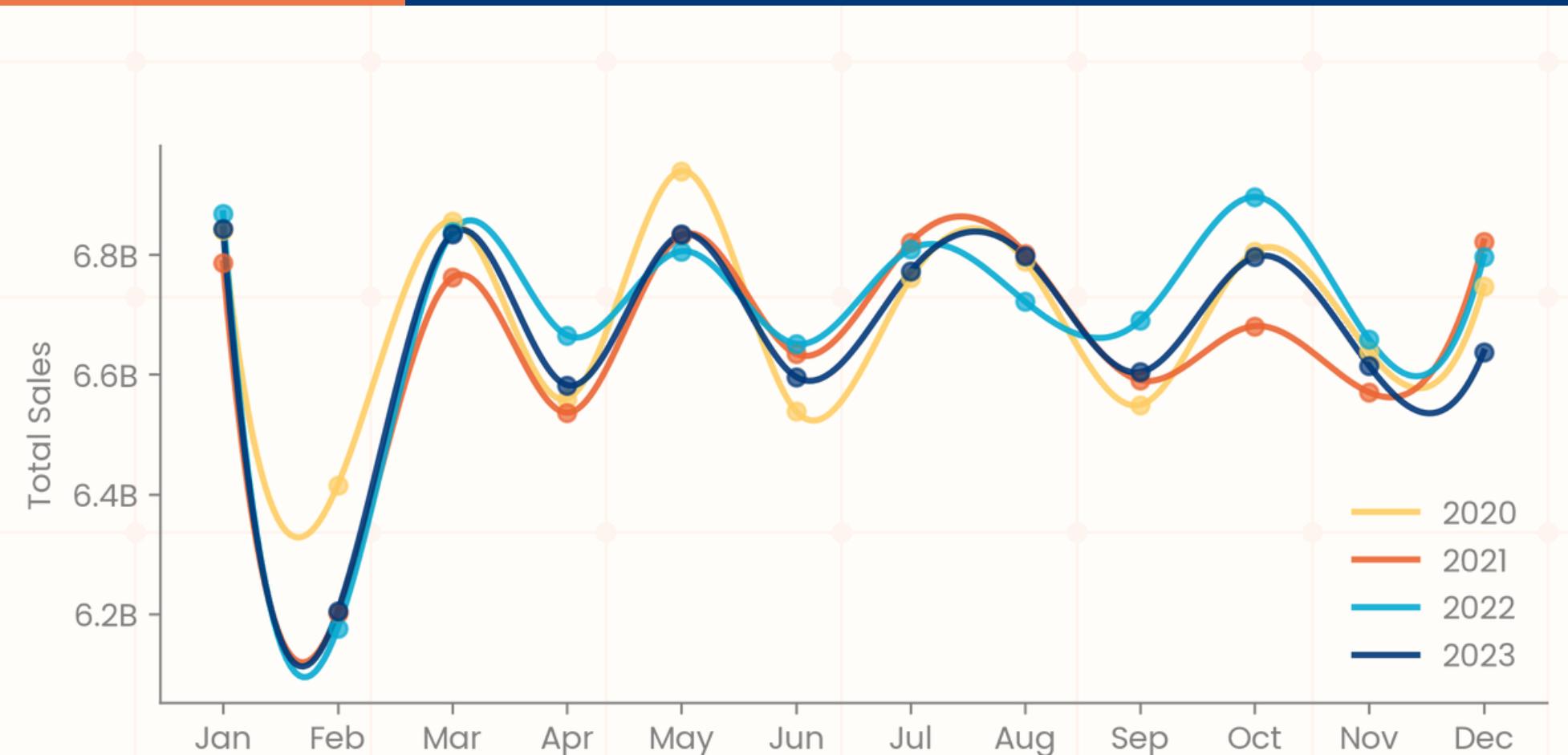


Truth #3

Our ratings
mean nothing
(4.0 = broken)

Full analysis ahead ➤

Trapped in Predictable Sales Rhythm



Sales analysis from **2020–2023** reveals **flat annual growth** across **all products, branches, and regions**. This widespread stagnation contrasts sharply with a highly predictable seasonal cycle. This cycle exhibits a recurring, almost bi-monthly, rhythm of peaks and troughs, with sales tending to **dip in even-numbered months**, most notably a deep trough **every February**, and **rise in the subsequent odd-numbered months**. The company is essentially trapped in this repetitive pattern, successfully managing seasonality but **failing to achieve real year-over-year growth**.

Average Annual Sales

Rp 80.3B

Range: Rp 80.0B – Rp 80.6B



Drive New Growth

Investigate market stagnation and pursue growth through product diversification or geographic expansion beyond currently saturated areas.



Optimize Core Revenue

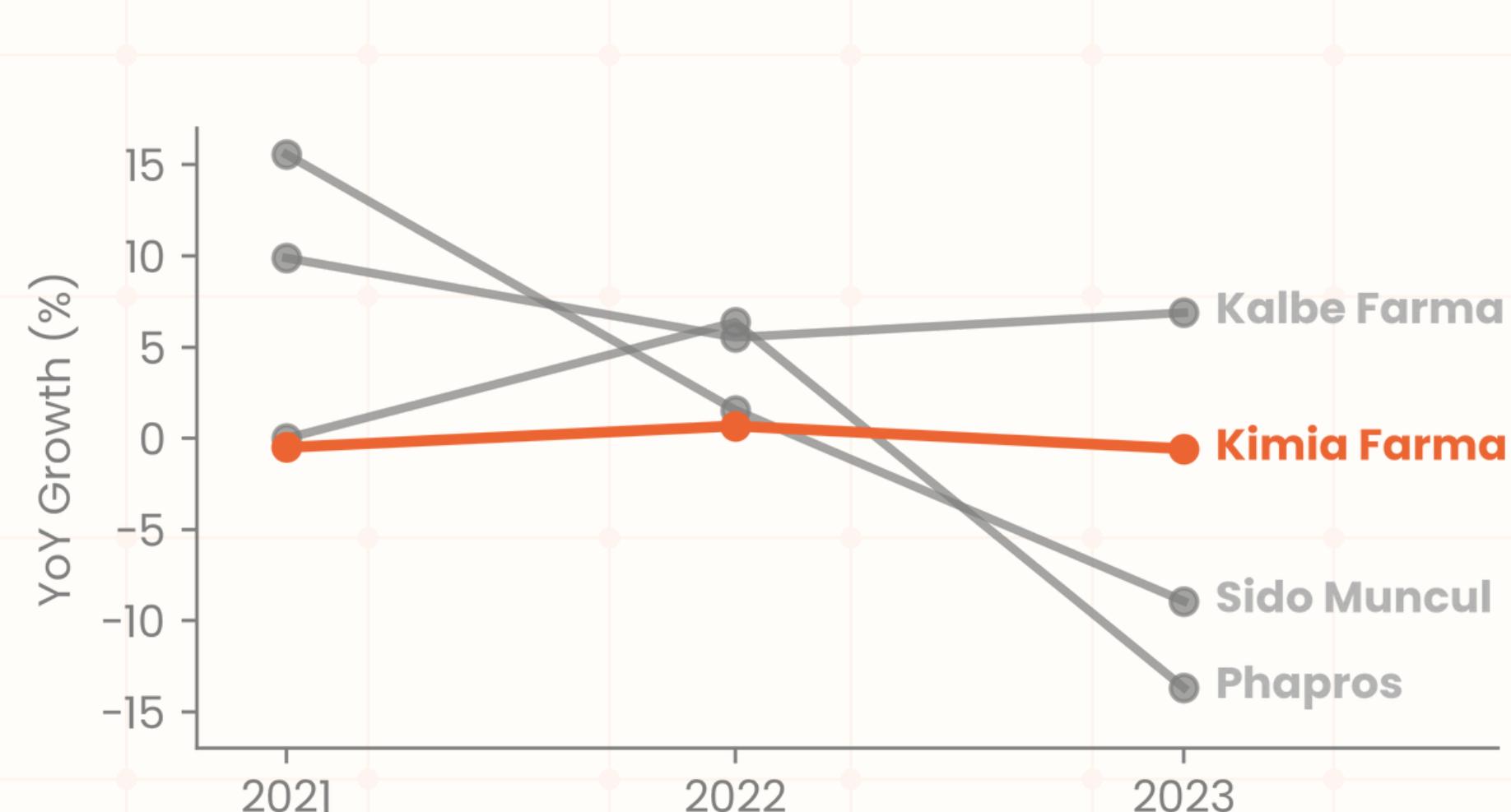
Maximize peak season sales with focused inventory and marketing, while reversing recent performance declines in key segments.



Manage Seasonality

Mitigate low season slumps with targeted promotions, or use these periods for essential non-sales activities like maintenance and training.

Breaking the Flat Growth Cycle



This competitor analysis confirms **our stagnation** is a **company-specific problem**, not a market trend. While our YoY growth has remained **flat near 0%**, our key competitor, **Kalbe Farma**, demonstrates that **consistent growth is achievable**, accelerating to **7% in 2023**. This proves we are not just stagnant; we are actively losing market share to a more agile competitor.

Source: Multiple industry reports, 2020–2023. Full references: [click here](#)

Kimia Farma YoY Growth

-0.13%

Flat growth 2020–2023



Analyze Winning Strategy

Immediately conduct a deep-dive analysis of Kalbe Farma to identify the specific strategies (product, marketing, operations) driving their 7% growth.



Investigate Market Volatility

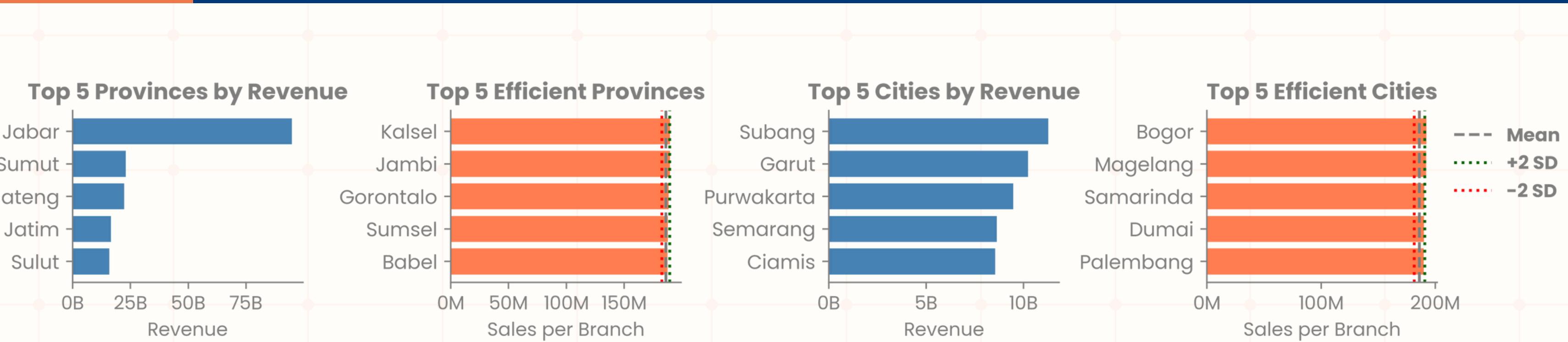
Study the 2021 spike from Sido Muncul and Phapros to identify any missed market opportunities that we can now enter with a sustainable strategy.



Shift Mindset from Stable to Growth

Our 0% stability is a liability. We must pivot the company mindset from maintenance to aggressive growth to reclaim lost market share.

Mid-Tier Cities Win Big



🏆 Success Pattern

- **Products:** 2 of top 3 = Psycholeptics
- **Location:** Mid-tier cities, not metropolitan
- **Profit:** 28-30% margin consistently
- **Volume:** High transaction count

⚙️ Recommended Actions

- **Replicate:** Scale proven best practices to other branches
- **Audit & Secure:** Prioritize compliance audits for Psycholeptics
- **Expansion:** Target similar mid-tier cities
- **Deep Dive:** Analyze local success factors



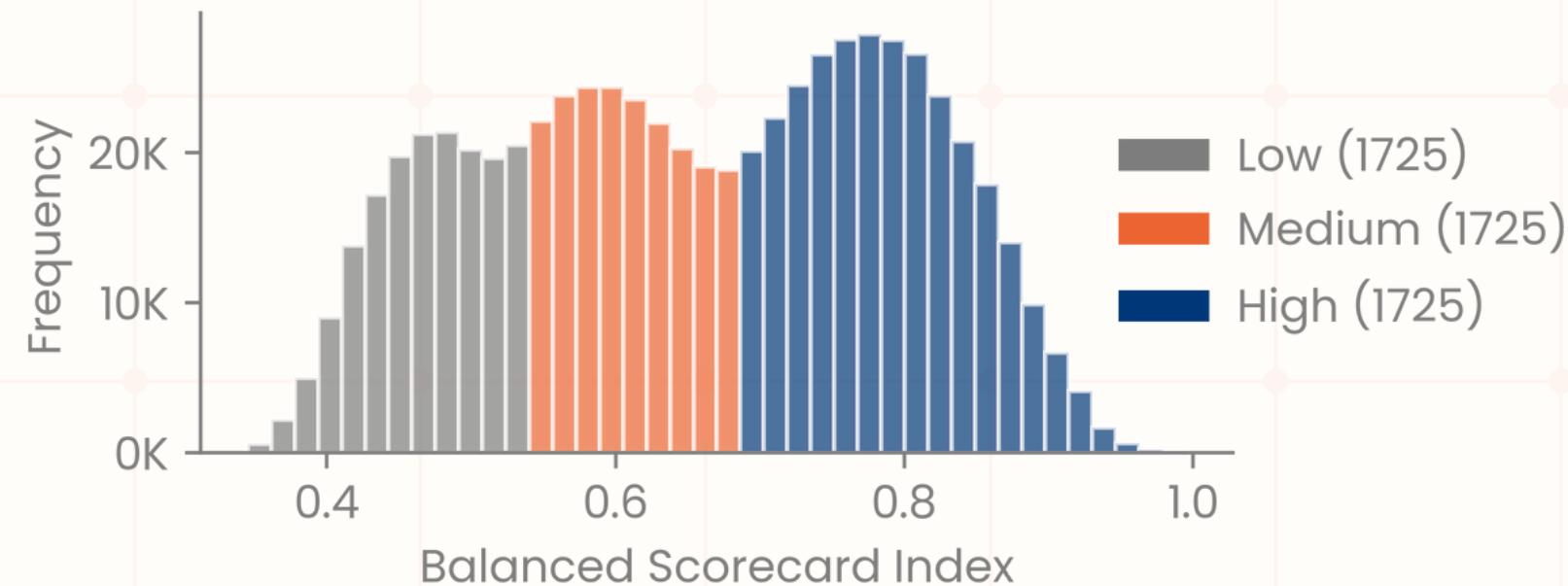
Branch Performance Gap Analysis

Avg Sales/Branch
Rp 186.2 M
Range Rp 152.9M – Rp 220.2M

Avg Profit/Branch
Rp 52.9 M
Range Rp 43.3M – Rp 62.9M

Avg Branch Rating
4.45
Range 3.9 – 5.0

Avg Transaction Rating
4.0
Range 3.9 – 4.09



Branch ratings are identical at **4.45 across all segments** with **minimal transaction rating variance** (3.87-4.06). Current rating systems fail to differentiate performance, sales and profit dominate segmentation, not customer metrics. **High segment achieves 30% margins** versus **20% in Low**, indicating replicable operational efficiency beyond volume.



Elevate Low Performers

Move top 15% of Low segment to Medium



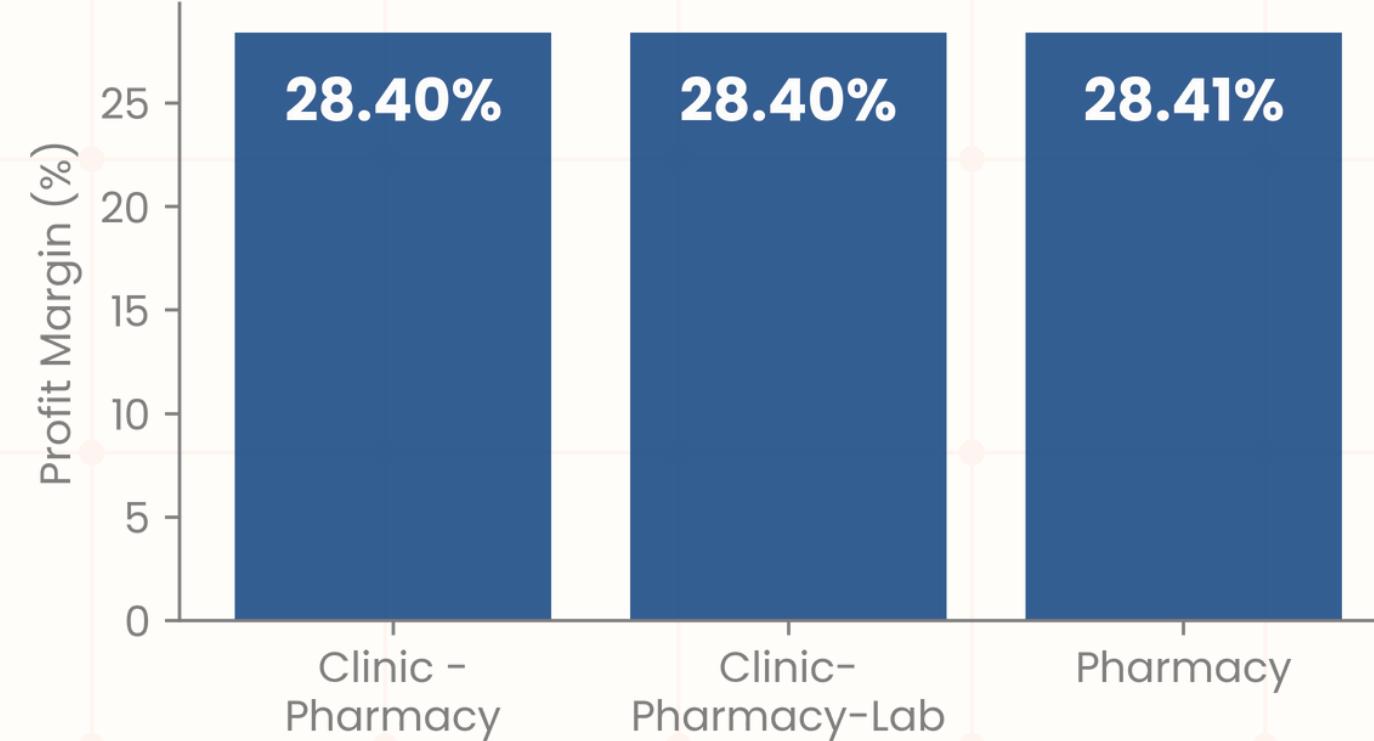
Margin Optimization

Replicate High segment best practices (product mix, cost control)

Segment	Avg Revenue	Avg Margin	Avg Rating
High	Rp 129.9M	30.0%	4.45
Medium	Rp 44.9M	26.1%	4.45
Low	Rp 11.3M	20.4%	4.45

The BSC framework equally weights branch rating, transaction rating, sales, and profit across 5,175 branches. Despite even distribution (1,725 per segment), High performers deliver 11.5x sales and 17x profit versus Low segment.

Proven Efficiency of Pharmacy-Only Model



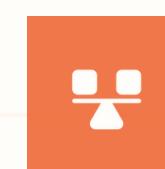
The **Pharmacy-Only** format has been identified as the **top-performing business model** across all key financial and operational metrics. While all three formats exhibit remarkably **similar performance**, the Pharmacy-Only model consistently maintains a slight advantage in total sales, profit, and per-branch efficiency. The **identical top-selling products and discount** strategies across all formats strongly suggest that the **core business driver is the pharmacy component**, not the supplementary clinic or lab services.

Metric	Pharmacy	Pharmacy-Clinic	Pharmacy-Clinic-Lab
Avg. Sales	IDR 186.8M	IDR 186.2M	IDR 185.6M
Avg. Profit	IDR 53.1M	IDR 52.9M	IDR 52.7M
Transactions	391	390	389
Profit Margin %	28.41%	28.40%	28.40%



Prioritize the Pharmacy-Only Model for Expansion

Allocate future expansion capital and resources primarily to opening new Pharmacy-Only branches. This model is the most proven, scalable, and financially efficient format.



Conduct a Cost-Benefit Analysis of Integrated Models

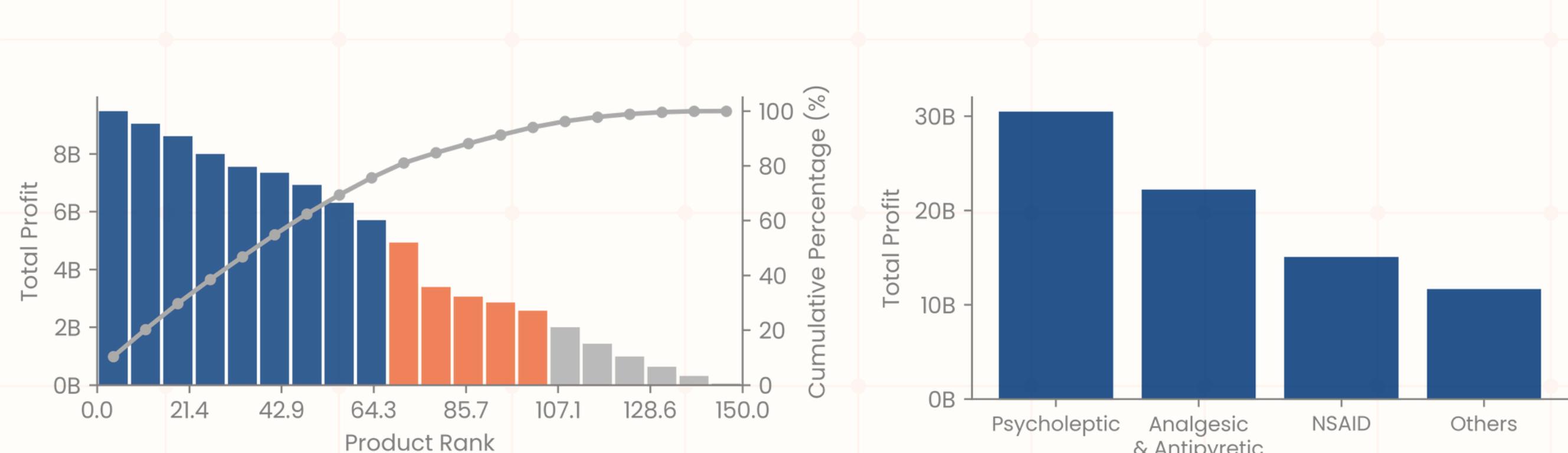
Initiate a formal review to quantify the return on investment (ROI) of the clinic and lab components within the "Clinic & Pharmacy" and "Clinic-Pharmacy-Lab" formats.

Uncovering Product Value Driver

High Priority
78 SKU
Rp 72B+ contribution

Medium Priority
32 SKU
Rp 13B+ contribution

Low Priority
40 SKU
Rp 4B+ contribution



A **sharp concentration pattern** emerges where **profit drops 10x** between high and low priority segments. **Psycholeptics' dominance at 55%** suggests potential for deeper category penetration. The **40 low-priority SKUs** represent **untapped margin improvement** through strategic bundling rather than standalone sales.



High Priority

Ensure full availability for valid Rx, maintain secure & compliant safety stock, and strengthen ties with key suppliers for 78 vital products.



Medium Priority

Monitor closely; spot items with potential to move up to Class A via ethical HCP engagement while keeping balanced stock.



Low Priority

Despite high transactions, these products matter. Reduce cost-to-serve and use bundling to boost margins.

Customer Segmentation & Retention Strategy

Champions and Loyal customers represent **40% of total revenue** potential (Rp 215.2T), making them critical focus areas for retention and expansion strategies, while **at-risk segments** hold Rp **61.2T** requiring immediate intervention.

Segment	Customers	Total Spending	Recommended Action
Champions	49,872	Rp 175.4 T	Implement VIP programs (e.g., priority pharmacist access, free delivery)
Loyal	26,440	Rp 39.8 T	Cross-sell adherence programs & Class A products, reward loyalty
Potential Loyalists	26,751	Rp 14.0 T	Launch Medication Review campaign on 2nd purchase
Promising	14,993	Rp 9.9 T	Enroll customers in the wellness/loyalty program immediately
New Customers	16,268	Rp 4.5 T	Send onboarding email series and offer pharmacist consultation
Need Attention	9,116	Rp 7.9 T	Run a pharmacist-led "Care Call" campaign (tele-pharmacy)
About to Sleep	21,895	Rp 6.6 T	Offer Adherence Reminder services and request feedback via survey
At Risk	25,660	Rp 27.3 T	Conduct in-depth surveys and provide targeted clinical support offers
Cannot Lose Them	9,974	Rp 8.9 T	Make personal calls from pharmacist & offer adherence support
Hibernating	42,731	Rp 21.4 T	Run low-effort, cost-effective health info/article campaigns
Lost	20,901	Rp 4.9 T	Ignore, ROI too low for reactivation efforts

Discounts Don't Buy Customer Loyalty

Profit Decline
-14.8%

Loss: Rp 21,750 per transaction

Rating Remains Constant

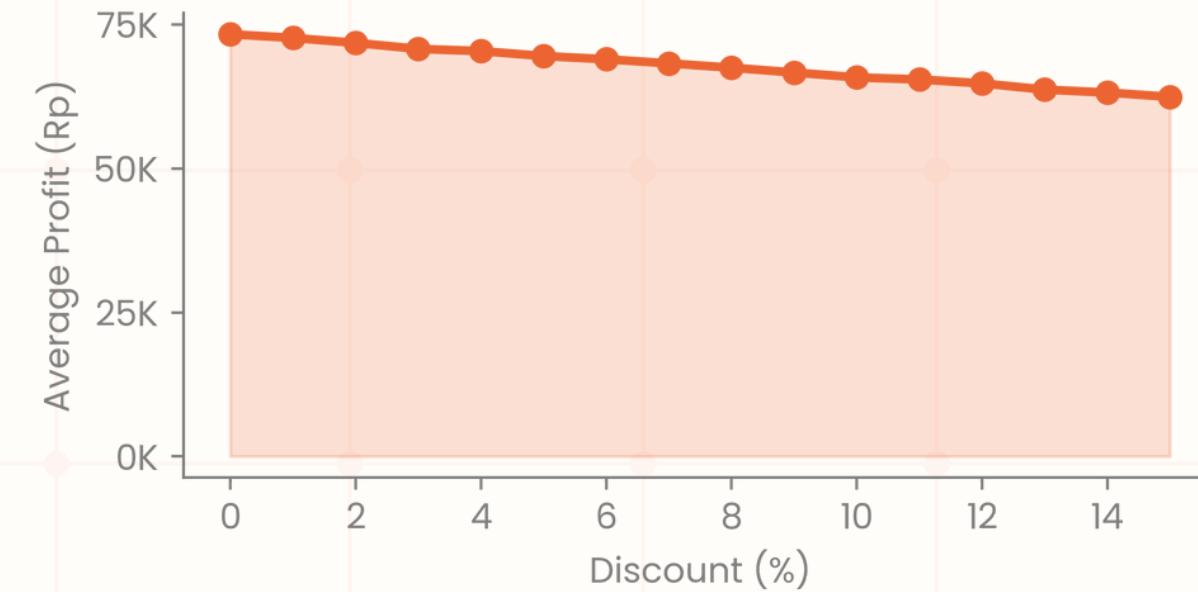
4.0

Consistent 4.0 across
discount levels

Stable Transaction Volume

~44K

Average volume
~44K transactions



Analysis of 650,152 transactions reveals **discounts are ineffective**. Customer ratings remain **constant at 4.0 across all discount levels** (0%-15%), while **profit drops 14.8%** from 0% to 15% discounts. With **near-zero correlation** between **discounts and satisfaction**, the data proves discounts only **erode margins without any customer or volume benefits**.

⚙️ Recommended Actions

- **Cease mass discounting:** it fails to improve satisfaction or volume
- **Enhance Patient Care:** uphold 4.0 rating via superior clinical service & counseling
- **Implement Patient Programs:** replace discounts with targeted health & adherence strategies

Fixing Our Broken Rating System

📊 Progress

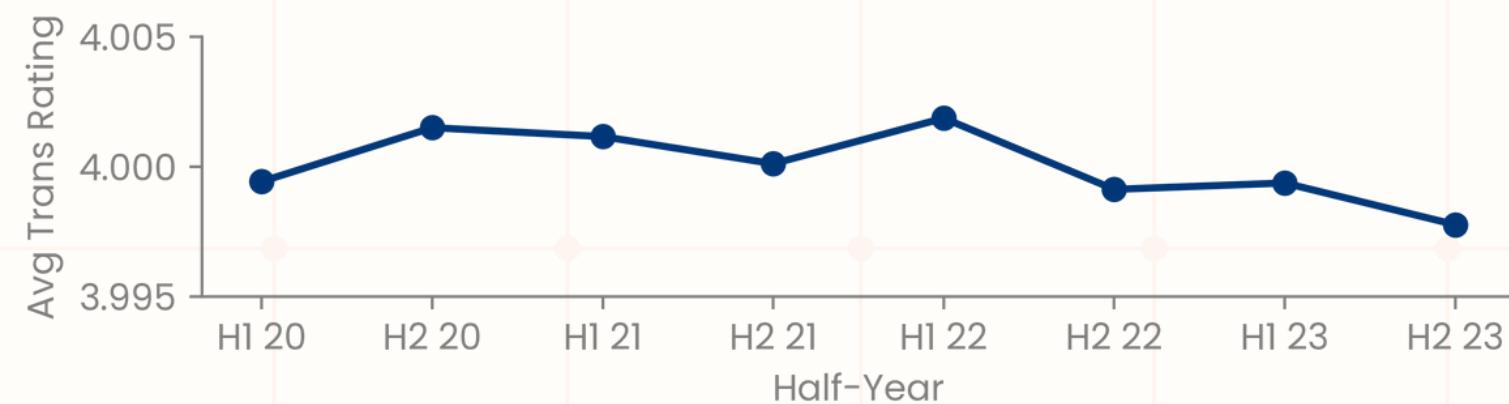
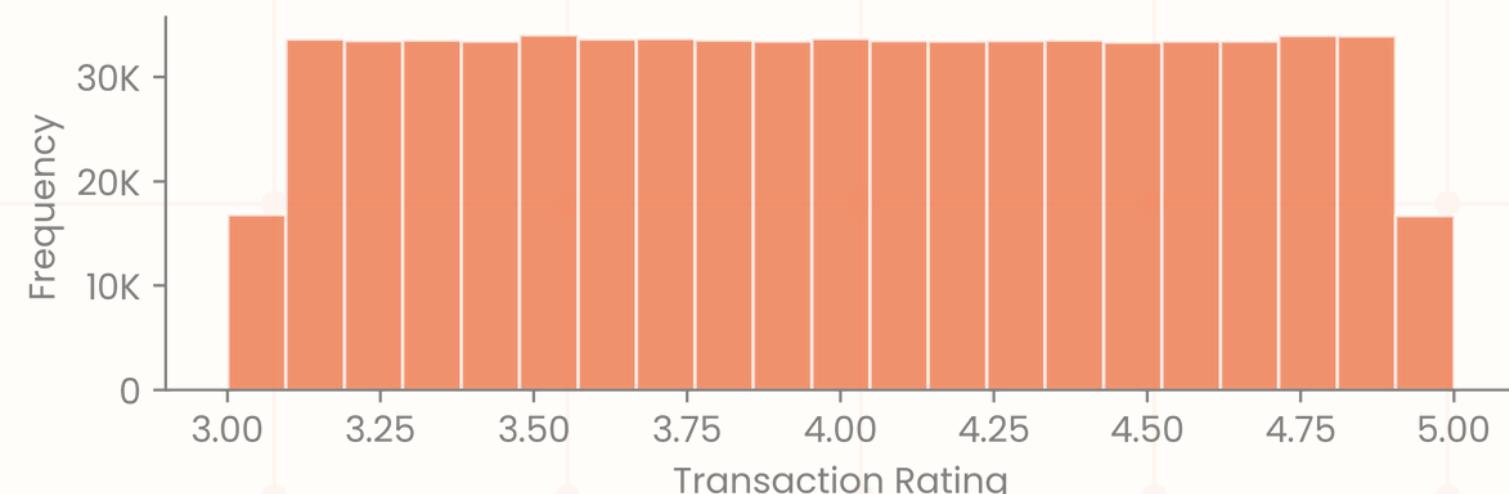
No improvement in 4 years

💼 Business Impact

Ratings don't affect sales behavior

💬 Feedback Value

Identical scores across all dimensions



Redesign Rating System

Add clinical dimensions (e.g., counseling clarity) for actionable feedback



Real-time Feedback Loop

Implement post-transaction survey via SMS/app to capture immediate sentiment



Investigate Root Cause

Analyze why ratings have zero impact; link feedback to clinical quality goals

Extreme uniformity (all dimensions score 4.0, provincial variance only 0.02 points) indicates **the rating system** is either **insensitive** or **customers are disengaged**. Combined with **zero correlation to business metrics**, this suggests the rating system needs a complete overhaul to become an actionable business intelligence tool.

Dataset Overview

⌚ Analysis Period

4 Years

2020 - 2023

📄 Total Transactions

650K+

Analyzed records

📁 Data Sources

4 Tables

Integrated via BigQuery

Executive Summary

⚠ Critical Findings

- Zero Growth (0% vs Competitor 7%)
- Discount Strategy Failure (-14.8% profit)
- Broken Rating System (4.0 constant)

🏃 Immediate Actions Required

- Stop Mass Discounting
- Analyze Competitor Strategy
- Redesign Rating System

💡 Key Opportunities

- Scale High-Performer Model
- Focus on Pharmacy-Only Format
- Activate Customer Segments

Thank You

by: Az-Zukhrufu Fi Silmi Suwondo



Watch Presentation 