Rakamin Academy X kimia farma

Kimia Farma Business Perfomance (2020 - 2023)

Kimia Farma - Big Data Analytics

Presented by
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Rakamin Academy

Raditya Adha Rahman

Data Enthusiast

I am Raditya Adha Rahman, a dedicated sixth-semester Computer Science student at the Indonesian University of Education, specializing in Data Analysis and Machine Learning. I have a strong background in data analytics, focusing on classification, regression, and predictive modeling, with leadership experience in managing technical teams.

Proficient in Python, SQL, R, TensorFlow, and Scikit-learn, I also have hands-on experience in data visualization using Tableau. I am eager to contribute as a Data Scientist, applying my skills to drive data-driven decisions while expanding my knowledge in data science and big data technologies.

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About Company

Kimia Farma is a leading pharmaceutical company in Indonesia, established in 1817, and firmly committed to improving public health through developing, producing, and distributing high-quality pharmaceutical products. As part of the state-owned enterprises (SOEs) group, Kimia Farma aims to provide innovative healthcare solutions.

The company offers diverse products, including generic drugs, health supplements, and medical devices. Kimia Farma is also actively involved in research and development (R&D) to create innovative health solutions that meet market needs.

With an extensive distribution network and over 1,000 pharmacies across Indonesia, Kimia Farma strives to provide accessible and reliable healthcare products and services. The company is dedicated to social responsibility, contributing to public well-being through health initiatives and educational programs.

Kimia Farma continues to innovate and implement digitalization in its operations to enhance efficiency and service effectiveness. With a vision to be a leading pharmaceutical company in Southeast Asia, Kimia Farma is committed to meeting industry standards and delivering added value to customers and stakeholders.

Project Portfolio

Between 2020 and 2023, Kimia Farma faced significant challenges due to the COVID-19 pandemic. Revenue declined significantly in 2020 and 2021 before showing signs of recovery in 2022. The company achieved positive growth through expanding its pharmacy network, product diversification, and investment in digitalization, such as health applications and online services.

However, profitability remained impacted by rising operational costs due to inflation in raw material prices, intensifying competition, and ongoing regulatory changes. A comprehensive sales data analysis and product performance will provide valuable insights for future business strategies.

Project explanation video here!

Video

1. Importing Dataset to BigQuery

In this project, the dataset used consists of four parts, namely:

1. Kf_final_transaction

   A dataset containing information about customer transactions.

2. Kf_inventory

   A dataset presenting data on the availability of medicine stocks.

3. Kf_kantor_cabang

   A dataset covering data on the availability of stocks at each branch office.

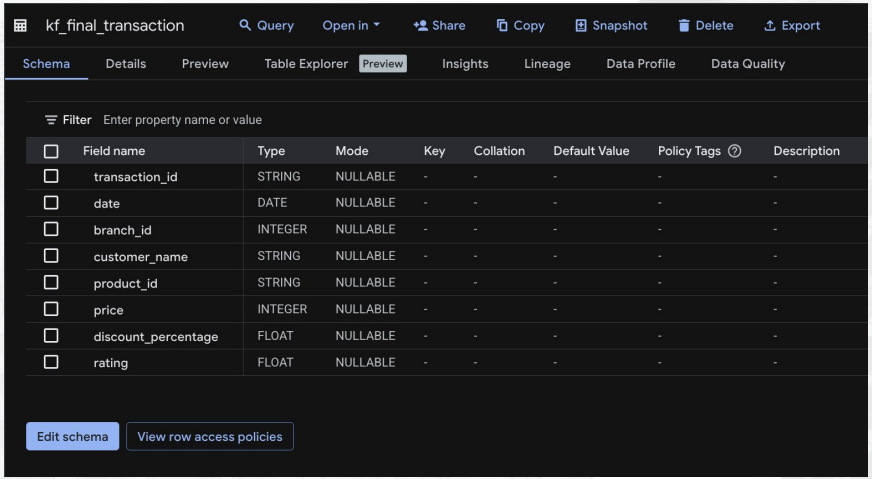
4. kf_product

   A dataset containing price information for various products.

kf_final_transaction

This dataset contains customer transaction data and consists of several columns as follows:

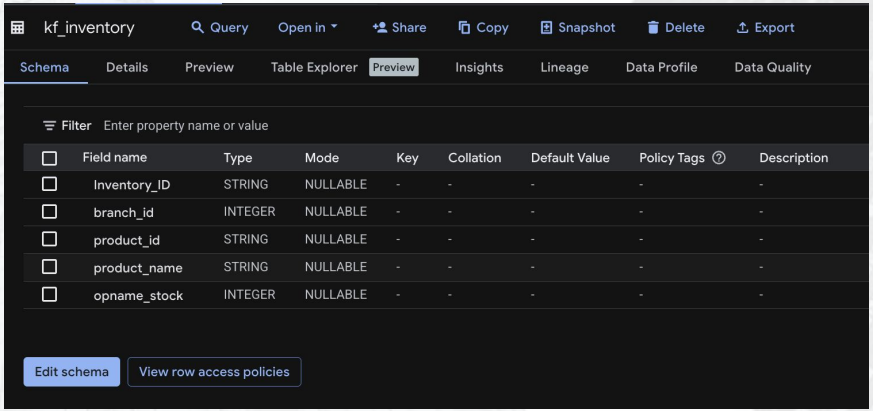
transaction_id: transaction ID code
product_id: medicine product code
branch_id: Kimia Farma branch ID code
customer_name: name of customer who made the transaction
date: date transaction was made
price: price of medicine
discount_percentage: Percentage discount given on medicine
rating: consumer rating of transaction made.



kf_inventory

This dataset contains information about the availability of medicines in various branches. The columns in this dataset include:

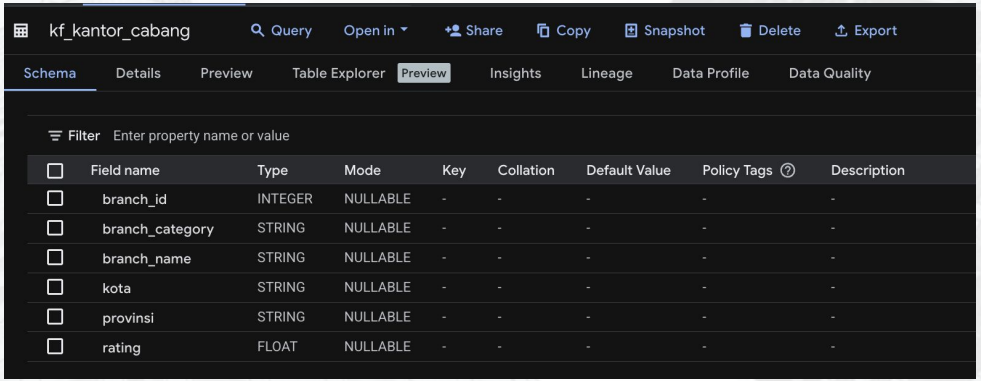
inventory_ID: product inventory code
branch_id: Kimia Farma branch ID code
product_id: product ID code
product_name: product name
opname_stock: product stock quantity.



kf_kantor_cabang

This dataset contains information about Kimia Farma branches, with the following structure:

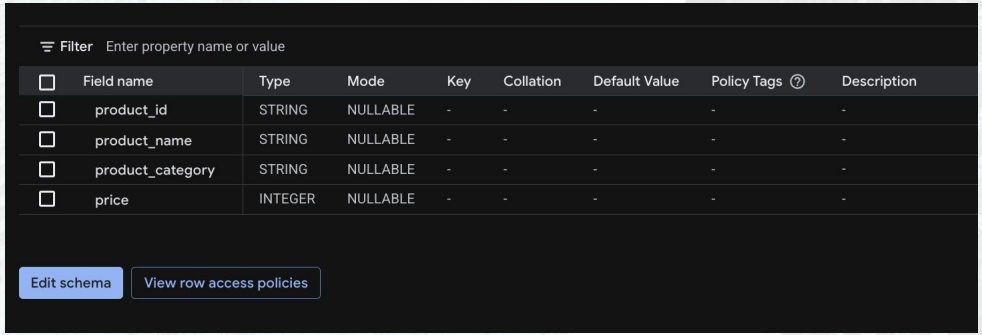
branch_id: Kimia Farma branch ID code
branch_category: Kimia Farma branch category
kota: Kimia Farma branch city
branch_name: Kimia Farma branch office name
provinsi: Kimia Farma branch province
rating: consumer rating of Kimia Farma branch



kf_product

This dataset contains information about products sold by Kimia Farma, with the following structure:

product_id : Unique code for each product
product_name : Full product name
category : Product category
price : Selling price of the product
supplier : Product supplier name



2. Tabel Analisa

The following is an analysis table based on the aggregation results from the previously imported table.

Row	transaction_id	date	branch_id	branch_name	kota	provinsi	rating_cabang	customer_name
1	TRX1232342	2023-05-30	62312	Kimia Farma - Apotek	Cianjur	Jawa Barat	4.5	Linda Butler
2	TRX8801605	2020-10-16	96558	Kimia Farma - Apotek	Denpasar	Bali	4.7	Andrea Campos
3	TRX5627898	2023-03-17	15949	Kimia Farma - Apotek	Gorontalo	Gorontalo	4.6	Lisa Miller
4	TRX6917505	2022-12-26	37602	Kimia Farma - Apotek	Garut	Jawa Barat	4.5	Morgan Smith
5	TRX4621252	2020-11-14	28401	Kimia Farma - Apotek	Magelang	Jawa Tengah	3.9	Jennifer Klein
6	TRX4743278	2021-09-25	63673	Kimia Farma - Apotek	Sorong	Papua Barat	4.8	Laura Mitchell
7	TRX6546352	2021-02-23	96065	Kimia Farma - Apotek	Karawang	Jawa Barat	5.0	Chelsea Williams
8	TRX4605325	2022-05-09	99182	Kimia Farma - Apotek	Makassar	Sulawesi Selatan	4.6	Keith Shaffer
9	TRX4080994	2020-07-09	37995	Kimia Farma - Apotek	Probolinggo	Jawa Timur	4.4	Courtney Boyd
10	TRX5651355	2023-12-26	14433	Kimia Farma - Apotek	Gorontalo	Gorontalo	4.0	James Patterson

product_id	product_name	actual_price	discount_percentage	nett_sales	persentase_gross_la	nett_profit	rating_transaksi
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	4.8
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	4.6
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	3.2
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	3.4
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	4.2
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	4.9
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	3.1
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	3.3
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	3.7
KF172	Psycholeptics drugs, Hypnotics...	2100	0.15	2096.85	0.1	209.685	3.2

3. BigQuery Syntax

The following is a syntax used to create an analysis table.

```
CREATE OR REPLACE TABLE rakamin-kf-analytics-457513.kimia_farma.kimia_farma_analysis AS
SELECT
    t.transaction_id,
    t.date,
    c.branch_id,
    c.branch_name,
    c.kota,
    c.provinsi,
    c.rating AS rating_cabang,
    t.customer_name,
    p.product_id,
    p.product_name,
    t.price AS actual_price,
    t.discount_percentage,
    (t.price - (t.price * t.discount_percentage / 100)) AS nett_sales,
    CASE
        WHEN t.price <= 50000 THEN 0.10
        WHEN t.price > 50000 AND t.price <= 100000 THEN 0.15
        WHEN t.price > 100000 AND t.price <= 300000 THEN 0.20
        WHEN t.price > 300000 AND t.price <= 500000 THEN 0.25
        ELSE 0.30
    END AS persentase_gross_laba,
    ((t.price - (t.price * t.discount_percentage / 100)) *
    CASE
        WHEN t.price <= 50000 THEN 0.10
        WHEN t.price > 50000 AND t.price <= 100000 THEN 0.15
        WHEN t.price > 100000 AND t.price <= 300000 THEN 0.20
        WHEN t.price > 300000 AND t.price <= 500000 THEN 0.25
        ELSE 0.30
    END) AS nett_profit,
    t.rating AS rating_transaksi
FROM rakamin-kf-analytics-457513.kimia_farma.kf_final_transaction t
JOIN rakamin-kf-analytics-457513.kimia_farma.kf_kantor_cabang c
 ON t.branch_id = c.branch_id
JOIN rakamin-kf-analytics-457513.kimia_farma.kf_product p
 ON t.product_id = p.product_id;
```

Click here to more know the project

3. BigQuery Syntax

```sql
CREATE OR REPLACE TABLE rakamin-kf-analytics-457513.kimia_farma.kimia_farma_analysis
AS
SELECT
    t.transaction_id,
    t.date,
    c.branch_id,
    c.branch_name,
    c.kota,
    c.provinsi,
    c.rating AS rating_cabang,
    t.customer_name,
    p.product_id,
    p.product_name,
    t.price AS actual_price,
    t.discount_percentage,
    (t.price - (t.price * t.discount_percentage / 100)) AS nett_sales,
    CASE
        WHEN t.price <= 50000 THEN 0.10
        WHEN t.price > 50000 AND t.price <= 100000 THEN 0.15
        WHEN t.price > 100000 AND t.price <= 300000 THEN 0.20
        WHEN t.price > 300000 AND t.price <= 500000 THEN 0.25
        ELSE 0.30
    END AS persentase_gross_laba,
    ((t.price - (t.price * t.discount_percentage / 100)) *
    CASE
        WHEN t.price <= 50000 THEN 0.10
        WHEN t.price > 50000 AND t.price <= 100000 THEN 0.15
        WHEN t.price > 100000 AND t.price <= 300000 THEN 0.20
        WHEN t.price > 300000 AND t.price <= 500000 THEN 0.25
        ELSE 0.30
    END) AS nett_profit,
    t.rating AS rating_transaksi
FROM rakamin-kf-analytics-457513.kimia_farma.kf_final_transaction t
JOIN rakamin-kf-analytics-457513.kimia_farma.kf_kantor_cabang c
  ON t.branch_id = c.branch_id
JOIN rakamin-kf-analytics-457513.kimia_farma.kf_product p
  ON t.product_id = p.product_id;
```

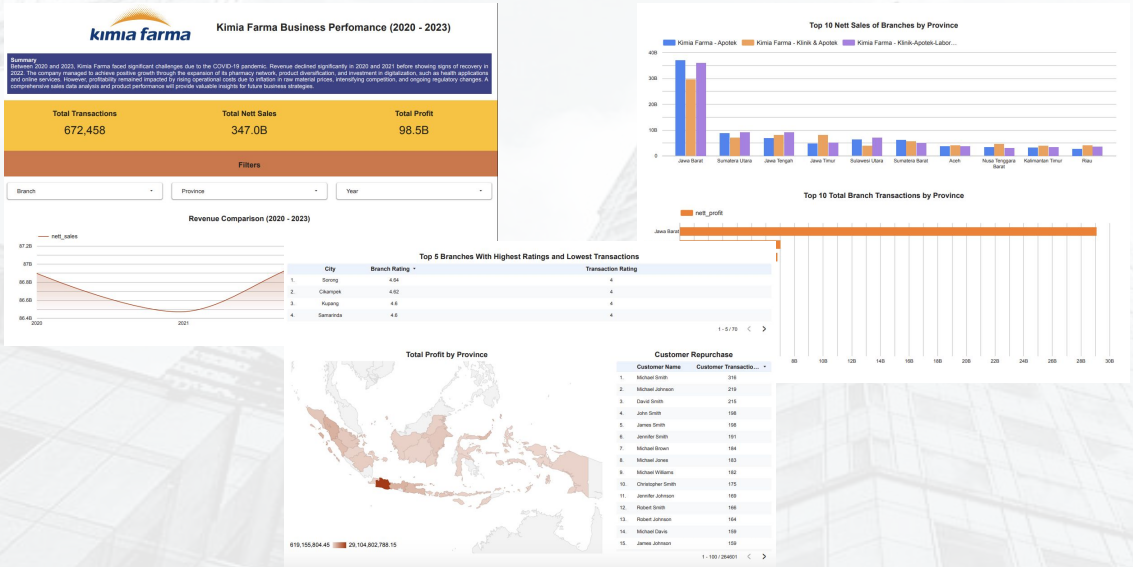
This SQL query creates the kimia_farma_analysis table by integrating data from three tables: kf_final_transaction, kf_kantor_cabang, and kf_product. It extracts key transactional details such as transaction ID, date, customer name, product information, and branch ratings.

The query calculates net sales by applying discount percentages to the actual price and uses a CASE statement to define gross profit margins based on product price ranges, ranging from 10% to 30%. Additionally, net profit is computed from net sales and gross profit margins.

By joining these three datasets through common identifiers, the query ensures a comprehensive view of sales and profitability across different branches, providing valuable insights for business analysis.

Click here to more know the project

4. Dashboard Performance Analytics



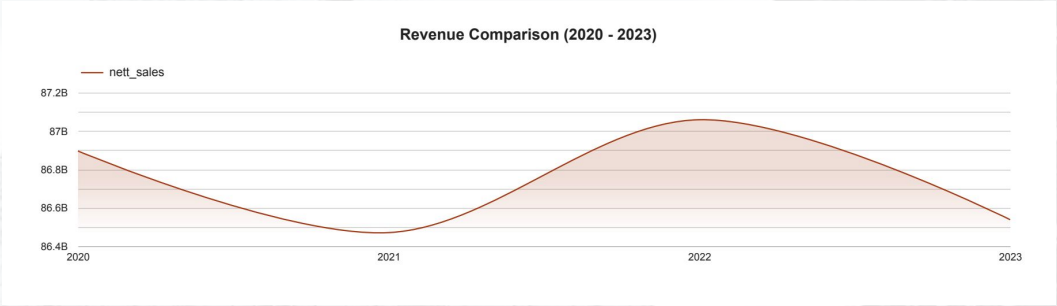
The following is an analysis dashboard that uses all of the data presented.

[Click here to more know the project]

4. Dashboard Performance Analytics

Revenue Comparison (2020-2023)

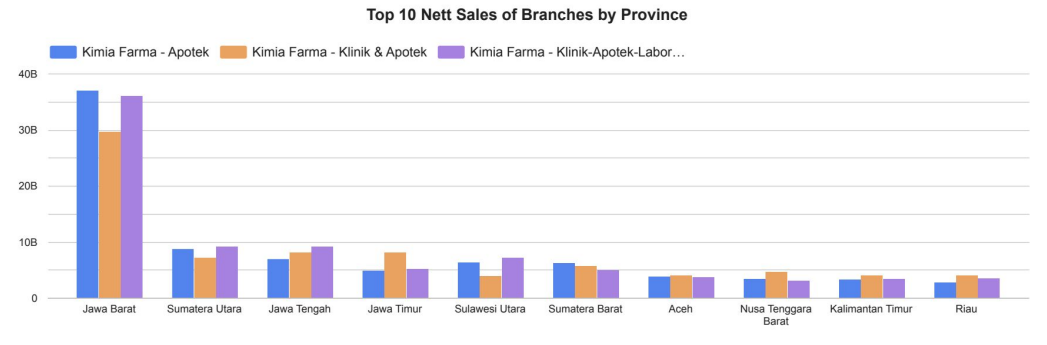
This visualization shows the change in Kimia Farma's revenue over four years. While there was a sharp decline in 2020 and 2021 due to the COVID-19 pandemic, revenues began to show a recovery trend in 2022, with revenue figures reaching 87 billion in 2023. This indicates a successful effort to improve the company's financial performance after difficult years.



4. Dashboard Performance Analytics

Top 10 Nett Sales of Branches by Province

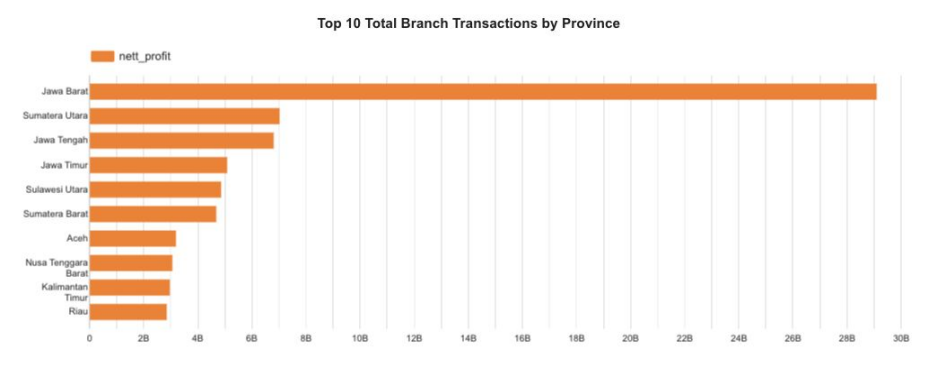
This visualization illustrates Kimia Farma branches' top 10 net sales by province. Jawa Barat leads significantly in net sales, followed by Sumatera Utara, which has much lower figures. The blue bars represent Kimia Farma-Apotek, which dominates the graph, while the orange and purple bars for Klinik & Apotek show consistently lower sales. This highlights Kimia Farma's strong presence in Jawa Barat and indicates potential for improvement in other provinces.



4. Dashboard Performance Analytics

Top 10 Total Branch Transactions by Province

This chart highlights the nett sales performance of Kimia Farma branches across various provinces. Jawa Barat stands out with the highest sales nearing 40 billion, significantly surpassing other provinces. This suggests a robust market presence and effective customer engagement strategies in this region. In contrast, provinces like Kalimantan Timur and Riau show much lower sales, indicating potential areas for improvement in service offerings and market penetration.



4. Dashboard Performance Analytics

Top 5 Branches With Highest Ratings and Lowest Transactions

This bar chart displays the total number of transactions across provinces, again placing Jawa Barat at the forefront. With around 300 million transactions, it demonstrates high customer activity. The other provinces, such as Sumatera Utara and Jawa Tengah, have lower transaction counts, which could reflect a smaller customer base or challenges in attracting repeat business, highlighting opportunities for enhanced marketing efforts.

Top 5 Branches With Highest Ratings and Lowest Transactions

	City	Branch Rating	Transaction Rating
1.	Sorong	4.64	4
2.	Cikampek	4.62	4
3.	Kupang	4.6	4
4.	Samarinda	4.6	4
5.	Pematangsiantar	4.59	4

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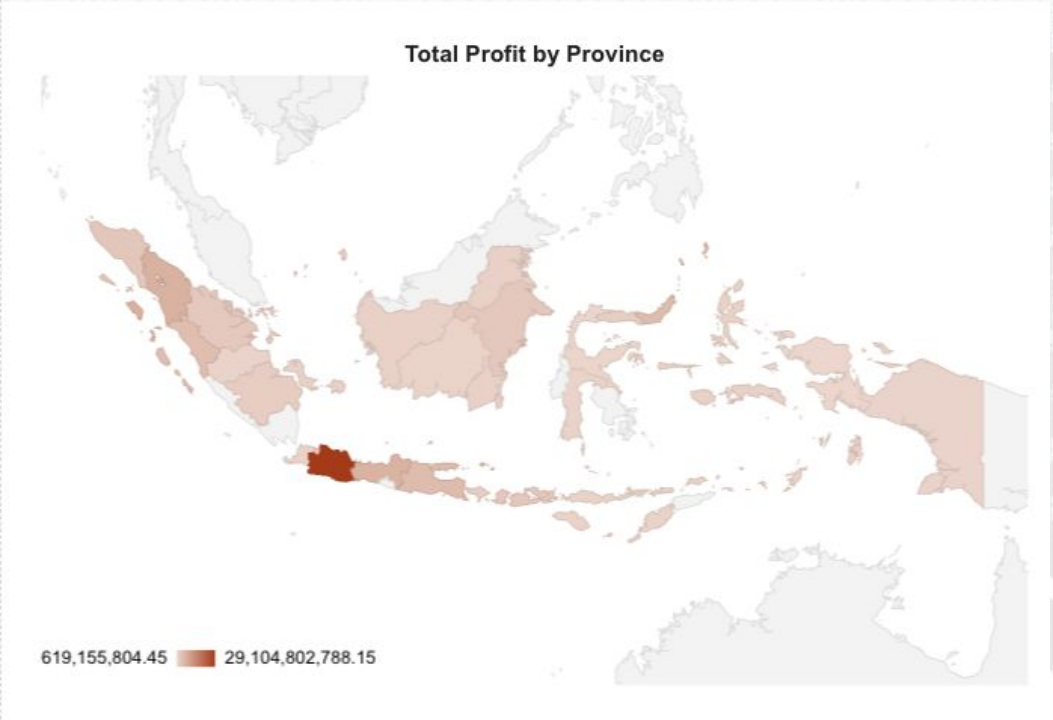
4. Dashboard Performance Analytics

Total Profit by Province

The map illustrates total profit distribution across provinces, with Jawa Barat highlighted in a deeper shade, indicating it as the most profitable region for Kimia Farma, contributing over 619 million. Other provinces show lighter shades, suggesting lower profit levels. This visualization highlights areas of strong financial performance and those that may require strategic improvement to boost profitability.



4. Dashboard Performance Analytics

Customer Repurchase

This table captures the top customers based on repurchase transactions. Michael Smith leads with 316 transactions, reflecting a strong loyalty to the brand. Michael Johnson and David Smith follow closely with 219 and 215 transactions, respectively. Multiple "Smith" surnames indicate potential family or community purchasing patterns. This data can inform Kimia Farma's marketing strategies, such as personalized offers or loyalty programs targeting these key customers to enhance retention.

Customer Repurchase

	Customer Name	Customer Transactio...
1.	Michael Smith	316
2.	Michael Johnson	219
3.	David Smith	215
4.	John Smith	198
5.	James Smith	198
6.	Jennifer Smith	191
7.	Michael Brown	184
8.	Michael Jones	183
9.	Michael Williams	182
10.	Christopher Smith	175
11.	Jennifer Johnson	169
12.	Robert Smith	166
13.	Robert Johnson	164
14.	Michael Davis	159
15.	James Johnson	159

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Thank You

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