

Performance Analytics

Business performance analysis Kimia Farma 2020-2023

Kimia Farma - Big Data Analytics

Presented by

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Irziqna Auliaurrachmah

Undergraduate Student

I'm currently a 4th-semester Statistics student at Sepuluh Nopember Institute of Technology (ITS) with a strong passion for data analysis and problem-solving. I aspire to become a data analyst and have developed skills in SQL, R, and Python to analyze data, derive insights, and support decision-making using Statistical Method. I'm eager to apply my knowledge to real-world projects, continuously improve my analytical abilities, and stay updated with industry trends

About Company

Kimia Farma is the first **pharmaceutical industry** company in Indonesia, established by the Dutch East Indies government in 1817. Initially, the company was named NV Chemicalien Handle Rathkamp & Co. In 1958, the Government of the Republic of Indonesia merged several pharmaceutical companies into PNF (Perusahaan Negara Farmasi) Bhinneka Kimia Farma.

On August 16, 1971, the legal status of PNF was changed to a Limited Liability Company, leading to the company's name change to PT Kimia Farma (Persero). Later, the company's name was changed from PT Kimia Farma (Persero) Tbk to **PT Kimia Farma Tbk**, effective as of February 28, 2020, as stated in the Deed of Minutes of the Extraordinary General Meeting of Shareholders (RUPSLB) Number 18 dated September 18, 2019. Additionally, Kimia Farma became a member of the state-owned pharmaceutical holding company (**Holding BUMN Farmasi**).

Project Portfolio

As a Big Data Analytics Intern at Kimia Farma, my role involves tackling various challenges that require a deep understanding of data and strong analytical skills. One of my main projects is evaluating **Kimia Farma's business performance from 2020 to 2023**, with a **dataset**:

- [kf_final_transaction.csv](#)
- [kf_inventory.csv](#)
- [kf_kantor_cabang.csv](#)
- [kf_product.csv](#)

The output is to create an analysis table in BigQuery and develop a **Performance Analytics Dashboard for Kimia Farma's Business (2020-2023)** using Google Looker Studio.

Project explanation video [here!](#)

Github repository [here!](#)

1. Importing Dataset to BigQuery

Step 1: Download the CSV Files

Initially, I downloaded the required CSV files to my local file.

Step 2: Access Google Cloud Console & Create a New Project

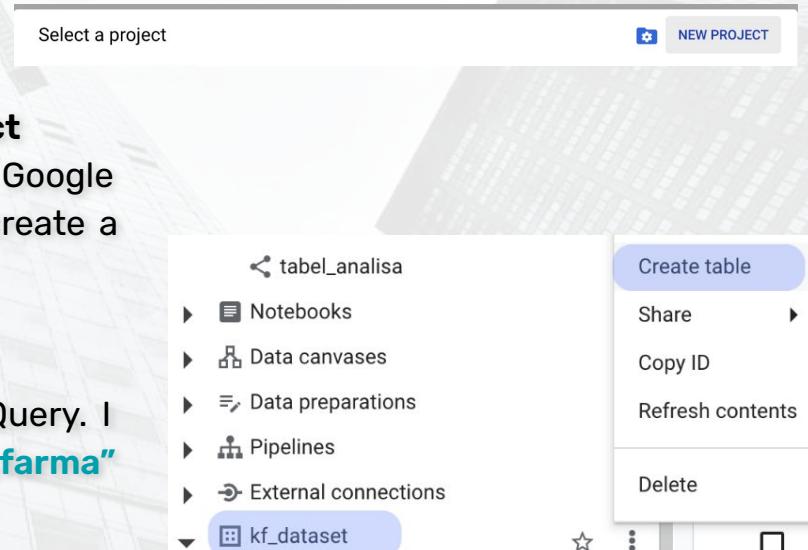
After ensuring that I had all the files ready, I logged into my Google Cloud account and navigated to the BigQuery section and create a new project "["Rakamin-KF-Analytics"](#)"

Step 3: Create a New Dataset

To keep my data organized, I created a new dataset in BigQuery. I clicked on the "Create Dataset" button and name it "["kimia_farma"](#) (originally)

Step 4: Create a Table for Each CSV

For each CSV file, I needed to create a new table. I selected the dataset I just created and then clicked on the "Create Table" option.



1. Importing Dataset to BigQuery

Step 5: Choose the Data Source

Clicked on "Browse" to locate and select the first CSV file from my local file. I repeated it for each of the remaining CSV files.

Step 10: Verify the Data

Finally, after creating all the tables, I checked each one to ensure that the data did not have missing value

kf_kantor_cab...				
Query Open in + F				
kf_kantor_cabang Details Preview Table explorer Preview				
Filter Enter property name or value				
<input type="checkbox"/> Field name Type Mode Key				
<input type="checkbox"/> branch_id INTEGER NULLABLE -				
<input type="checkbox"/> branch_category STRING NULLABLE -				
<input type="checkbox"/> branch_name STRING NULLABLE -				
<input type="checkbox"/> kota STRING NULLABLE -				
<input type="checkbox"/> provinsi STRING NULLABLE -				
<input type="checkbox"/> rating FLOAT NULLABLE -				

kf_inventory				
Query Open in + F				
Schema Details Preview Table explorer Preview				
Filter Enter property name or value				
<input type="checkbox"/> Field name Type Mode Key C				
<input type="checkbox"/> Inventory_ID STRING NULLABLE - -				
<input type="checkbox"/> branch_id INTEGER NULLABLE - -				
<input type="checkbox"/> product_id STRING NULLABLE - -				
<input type="checkbox"/> product_name STRING NULLABLE - -				
<input type="checkbox"/> opname_stock INTEGER NULLABLE - -				

kf_final_transa...				
Query Open in + F				
kf_final_transaction Details Preview Table explorer Preview				
Filter Enter property name or value				
<input type="checkbox"/> Field name Type Mode Key C				
<input type="checkbox"/> transaction_id STRING NULLABLE - -				
<input type="checkbox"/> date DATE NULLABLE - -				
<input type="checkbox"/> branch_id INTEGER NULLABLE - -				
<input type="checkbox"/> customer_name STRING NULLABLE - -				
<input type="checkbox"/> product_id STRING NULLABLE - -				
<input type="checkbox"/> price INTEGER NULLABLE - -				
<input type="checkbox"/> discount_percentage FLOAT NULLABLE - -				
<input type="checkbox"/> rating FLOAT NULLABLE - -				

kf_product				
Query Open in + F				
Schema Details Preview Table explorer Preview				
Filter Enter property name or value				
<input type="checkbox"/> Field name Type Mode Key				
<input type="checkbox"/> product_id STRING NULLABLE -				
<input type="checkbox"/> product_name STRING NULLABLE -				
<input type="checkbox"/> product_category STRING NULLABLE -				
<input type="checkbox"/> price INTEGER NULLABLE -				

2. Tabel Analisa

The analysis table is based on the aggregation results from the four previously imported tables
 Preview Table:

Row	transaction_id	date	branch_id	branch_name	kota	provinsi
1	TRX5103706	2021-08-25	93529	Kimia Farma - Klinik & Apotek	Yogyakarta	DI Yogyakarta
2	TRX5388139	2020-12-29	24832	Kimia Farma - Klinik-Apotek-Lab...	Pekanbaru	Riau
3	TRX7251897	2020-02-03	20505	Kimia Farma - Apotek	Cilacap	Jawa Tengah
4	TRX4943675	2022-09-09	17678	Kimia Farma - Klinik & Apotek	Subang	Jawa Barat
5	TRX3469820	2020-06-20	28315	Kimia Farma - Klinik-Apotek-Lab...	Sukabumi	Jawa Barat
6	TRX1213133	2021-09-17	22280	Kimia Farma - Apotek	Batam	Kepulauan Riau

Row	rating_cabang	customer_name	product_id	product_name	actual_price	discount_percentage
1	4.3	Derrick Wright III	KF116	Psycholeptics drugs, Hypnotics...	251700	0.1
2	4.2	Elizabeth Ramos	KF116	Psycholeptics drugs, Hypnotics...	251700	0.12
3	4.5	Meghan Warner	KF116	Psycholeptics drugs, Hypnotics...	251700	0.09
4	4.8	Steven Roberts	KF116	Psycholeptics drugs, Hypnotics...	251700	0.1
5	3.9	Linda Bruce DDS	KF116	Psycholeptics drugs, Hypnotics...	251700	0.07
6	4.5	Cory Castro	KF116	Psycholeptics drugs, Hypnotics...	251700	0.11

percentase_gross_ja	nett_sales	nett_profit	rating_ja
20	251448.3	50289.66	3.0
20	251397.96	50279.5...	3.0
20	251473.47	50294.6...	3.0
20	251448.3	50289.66	3.0
20	251523.81	50304.7...	3.0
20	251423.13	50284.6...	3.0

3. BigQuery Syntax

```
1 -- Define the 'transaksi' CTE
2 WITH transaksi AS (
3     SELECT
4         transaction_id,
5         date,
6         branch_id,
7         product_id,
8         customer_name,
9         discount_percentage,
10        rating
11    FROM `kf_dataset.kf_final_transaction`
12 ),
13 -- Define the 'cabang' CTE
14 cabang AS (
15     SELECT
16         branch_id,
17         branch_name,
18         kota,
19         provinsi,
20         rating
21    FROM `kf_dataset.kf_kantor_cabang`
22 ),
```

```
23 -- Define the 'produk' CTE
24 produk AS (
25     SELECT
26         product_id,
27         product_name,
28         price
29    FROM `kf_dataset.kf_product`
30 ),
31 -- Define the 'tabel_analisa' CTE
32 tabel_analisa AS [
33     SELECT
34         t.transaction_id, -- t as alias for transaksi
35         t.date,
36         c.branch_id, --c as alias for cabang
37         c.branch_name,
38         c.kota,
39         c.provinsi,
40         c.rating AS rating_cabang,
41         t.customer_name,
42         p.product_id, -- p as alias for produk
43         p.product_name,
44         p.price AS actual_price,
45         t.discount_percentage,
```

3. BigQuery Syntax

```

46    -- calculates the gross profit percentage based on the product price
47    CASE
48        WHEN p.price <= 50000 THEN 10
49        WHEN p.price > 50000 AND p.price <= 100000 THEN 15
50        WHEN p.price > 100000 AND p.price <= 300000 THEN 20
51        WHEN p.price > 300000 AND p.price <= 500000 THEN 25
52        WHEN p.price > 500000 THEN 30
53    END AS persentase_gross_laba,
54    -- calculates the net sales after applying the discount
55    (p.price - (p.price * t.discount_percentage / 100)) AS nett_sales,
56    -- calculates the net profit based on the net sales and the gross profit percentage
57    ((p.price - (p.price * t.discount_percentage / 100)) *
58    CASE
59        WHEN p.price <= 50000 THEN 0.10
60        WHEN p.price > 50000 AND p.price <= 100000 THEN 0.15
61        WHEN p.price > 100000 AND p.price <= 300000 THEN 0.20
62        WHEN p.price > 300000 AND p.price <= 500000 THEN 0.25
63        WHEN p.price > 500000 THEN 0.30
64    END) AS nett_profit,
65    t.rating AS rating_transaksi
66    FROM transaksi t --t as alias for transaksi
67    JOIN cabang c ON t.branch_id = c.branch_id --inner join transaction data with branch data
68    JOIN produk p ON t.product_id = p.product_id --inner join transaction and branch data with product data
69  )
70  -- Final selection
71  SELECT * FROM tabel_analisa;

```

Notes Ketentuan persentase_gross_laba:

Harga <= Rp 50.000 -> laba 10%
 Harga > Rp 50.000 - 100.000 -> laba 15%
 Harga > Rp 100.000 - 300.000 -> laba 20%
 Harga > Rp 300.000 - 500.000 -> laba 25%
 Harga > Rp 500.000 -> laba 30%

4. Dashboard Performance Analytics

Performance Analytics Kimia Farma 2020-2023

Dashboard Link

Select date

Provinsi

Kota

Cabang

Produk

Total Transaksi
672,458

Total Penjualan
Rp346.96B

Total Keuntungan
Rp98.54B

Avg Rating Transaksi
4.0

Total Produk
150

Total Customer
264,601

Total Cabang
1,725

Nett Sales Over Year (Month)

Top 5 Cabang Dengan Rating Tertinggi & Rating Transaksi Terendah

ID Cabang	Nama Cabang	Provinsi	Kota	Rating Cabang	Rating Transaksi
1. 51033	Kimia Farma - Klinik-Apotek-Lab...	Sumaters Utara	Pematangsiantar	5	3
2. 85716	Kimia Farma - Apotek	Jawa Timur	Malang	5	3
3. 21754	Kimia Farma - Klinik-Apotek-Lab...	Kalimantan Barat	Pontianak	5	3
4. 62707	Kimia Farma - Apotek	Nusa Tenggara Barat	Mataaram	5	3
5. 56801	Kimia Farma - Apotek	Jawa Barat	Subang	5	3

1 - 5 / 96 < >

Total Profit Setiap Provinsi

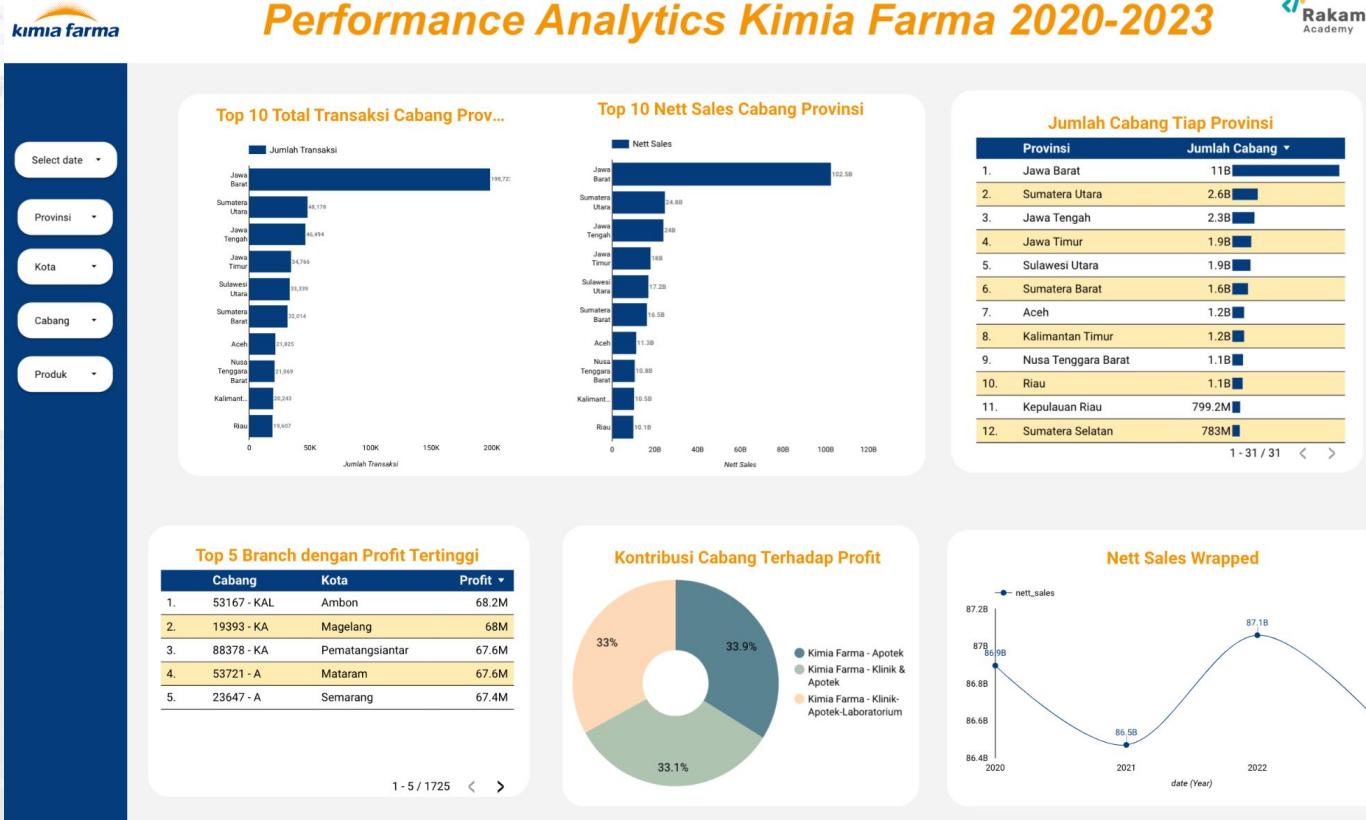
Google

Keyboard shortcuts | Map data ©2025 Google | Terms

Top 3 Best-Selling Product

Product	Jumlah Transaksi
Psycholeptics drugs, Hypnotics and sedatives drugs	134,849
Psycholeptics drugs, Anxiolytic drugs	107,207
Drugs for obstructive airway diseases	89,918

4. Dashboard Performance Analytics



4. Dashboard Performance Analytics

Performance Analytics Kimia Farma 2020-2023

Snapshot Data Harian

	date ▾	Jumlah Transaksi	Jumlah Produk	Total Pendapatan	Total Profit
1.	1 Jan 2020	494	146	Rp256.01M	Rp72.64M
2.	2 Jan 2020	459	144	Rp239.87M	Rp68.15M
3.	3 Jan 2020	452	142	Rp240.58M	Rp68.83M
4.	4 Jan 2020	451	147	Rp233.25M	Rp66.41M
5.	5 Jan 2020	432	141	Rp228.36M	Rp65.12M
6.	6 Jan 2020	475	138	Rp246.07M	Rp69.91M
7.	7 Jan 2020	453	144	Rp234.55M	Rp66.62M
8.	8 Jan 2020	432	140	Rp219.17M	Rp62.08M
9.	9 Jan 2020	446	141	Rp220.48M	Rp62.41M
10.	10 Jan 2020	460	143	Rp229.5M	Rp64.75M
11.	11 Jan 2020	481	144	Rp252.15M	Rp71.87M
12.	12 Jan 2020	478	141	Rp246.58M	Rp70.02M
13.	13 Jan 2020	453	143	Rp238.47M	Rp67.82M
14.	14 Jan 2020	490	145	Rp247.63M	Rp70.23M
15.	15 Jan 2020	458	140	Rp241.86M	Rp68.87M

1 - 1460 / 1460 < >

Dashboard Link

kimia farma

Select date

Provinsi

Kota

Cabang

Produk

4. Dashboard Performance Analytics

Dashboard Summary

Total Transaksi
672,458

Total Penjualan
Rp346.96B

Total Keuntungan
Rp98.54B

Avg Rating Transaksi
4.0

Total Produk
150

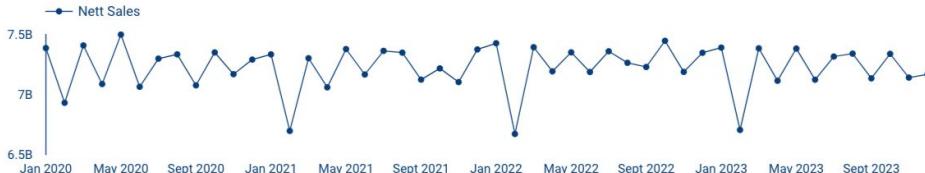
Total Customer
264,601

Total Cabang
1,725

We got **264,601** number of **Customers** with **672,458** number of **Transactions**. This indicates repeat purchase

Trend Analysis

Nett Sales Over Year (Month)



Showing **relatively stable** pattern with periodic dips and recovery

There are noticeable sharp declines around **February** in each year. This suggests a potential **seasonal effect**

4. Dashboard Performance Analytics

Top 5 Cabang Dengan Rating Tertinggi & Rating Transaksi Terendah

ID Cabang	Nama Cabang	Provinsi	Kota	Rating Cabang	Rating Transaksi
1. 51033	Kimia Farma - Klinik-Apotek-Lab...	Sumatera Utara	Pematangsiantar	5	3
2. 85716	Kimia Farma - Apotek	Jawa Timur	Malang	5	3
3. 21754	Kimia Farma - Klinik-Apotek-Lab...	Kalimantan Barat	Pontianak	5	3
4. 62707	Kimia Farma - Apotek	Nusa Tenggara Barat	Mataram	5	3
5. 56801	Kimia Farma - Apotek	Jawa Barat	Subang	5	3

1 - 5 / 96 < >

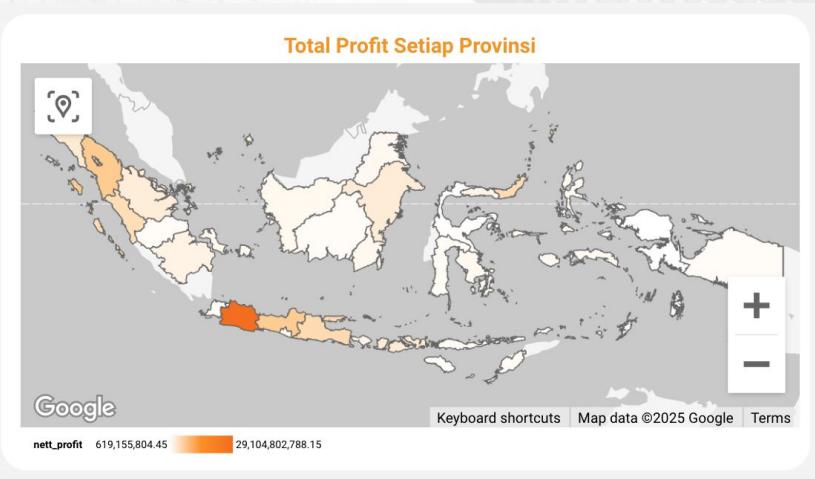
Provinces with **higher net profit** are highlighted in **darker colors**

High-profit provinces indicate strong market **demand**, high **customer loyalty**, or high number of **branch**

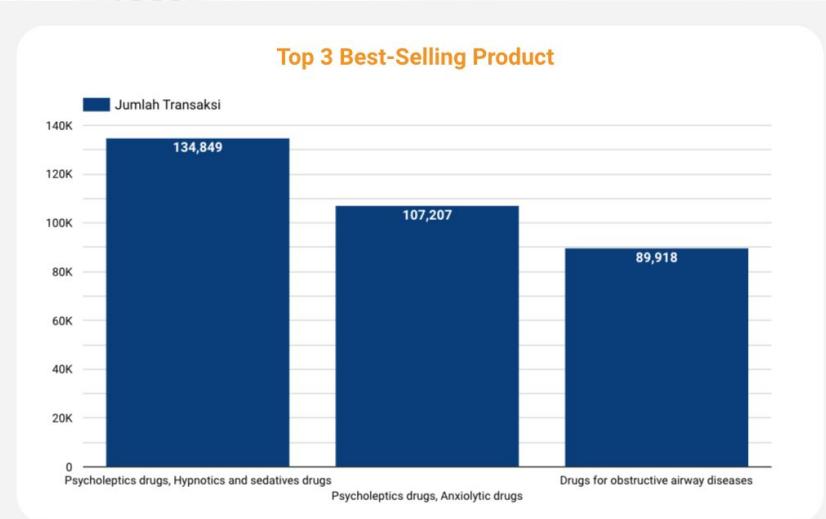
Jawa Barat stands out as the region with the highest number of profit while **Sumatera, Kalimantan, and Sulawesi** follow with relatively lower number of profit

Highly rated branch (rating = 5), meaning they are satisfied with the **overall service, staff, or facilities**.

But the **low transaction rating** suggests dissatisfaction with aspects related to the buying process, such as **pricing, product availability, waiting time, or payment methods**.



4. Dashboard Performance Analytics



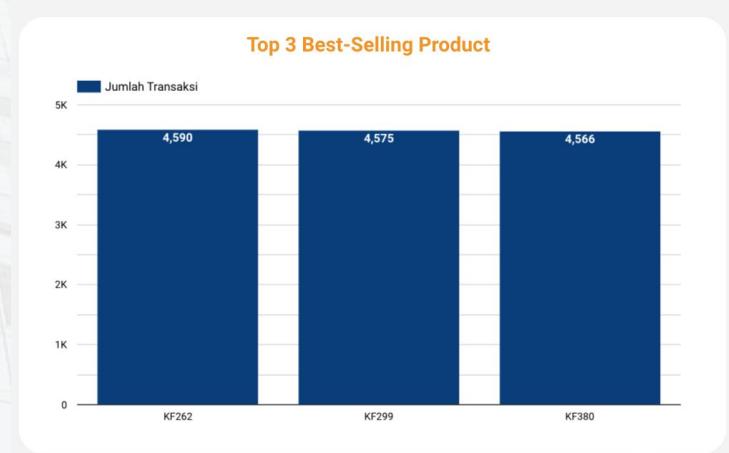
Drill down

Example:

These are the Product ID from the Top 3 Best-Selling Product Category: Psycholeptics drugs, Hypnotics, and sedatives drugs

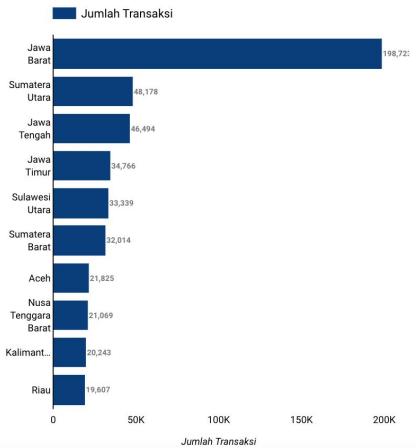
Optimize stock levels to meet the consistently high demand. By closely **monitoring sales trends**, businesses can prevent stockouts.

Additionally, **expanding product offerings** can further capitalize on market demand by introducing complementary products

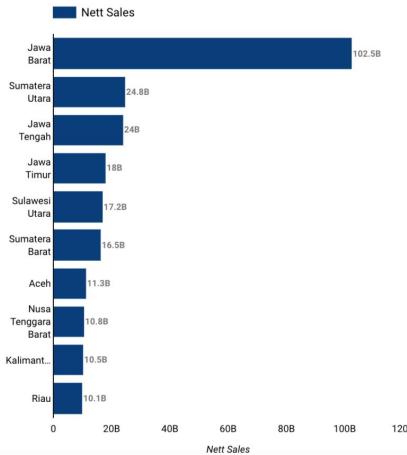


4. Dashboard Performance Analytics

Top 10 Total Transaksi Cabang Prov...



Top 10 Nett Sales Cabang Provinsi



The Top 10 Provinces with the highest number of **Transactions** and **Nett Sales** are **align** with the Top Provinces in number of **Branch**, suggesting a **strong correlation** between **branch presence and financial performance**.

Jumlah Cabang Tiap Provinsi

Provinsi	Jumlah Cabang
1. Jawa Barat	11B
2. Sumatera Utara	2.6B
3. Jawa Tengah	2.3B
4. Jawa Timur	1.9B
5. Sulawesi Utara	1.9B
6. Sumatera Barat	1.6B
7. Aceh	1.2B
8. Kalimantan Timur	1.2B
9. Nusa Tenggara Barat	1.1B
10. Riau	1.1B
11. Kepulauan Riau	799.2M
12. Sumatera Selatan	783M

Exploration

```

1 SELECT
2   provinsi,
3   COUNT(branch_id) AS branch_count,
4   SUM(net_sales) AS total_nett_sales
5 FROM
6   `annular-arena-454419-v5.kf_dataset.kf_analisa`
7 GROUP BY
8   provinsi;

```

Row	provinsi	branch_count	total_nett_sales
1	DI Yogyakarta	8676	4405915572.729...
2	Riau	19607	10107948287.02...
3	Jawa Tengah	46494	24025659366.44...
4	Jawa Barat	198723	102489346115.7...
5	Kepulauan Riau	15907	8219237979.289...
6	Kalimantan Timur	20243	10497809651.15...

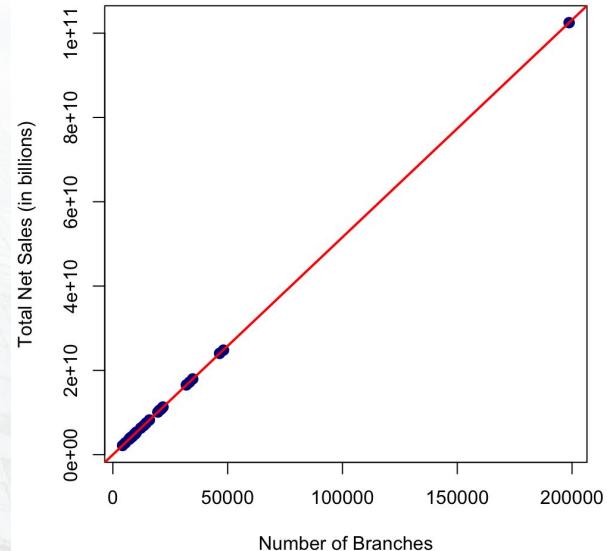
Using Software R

```

> data_corr <- read.csv("corr data.csv", header = T)
> correlation <- cor(data_corr$branch_count, data_corr$total_nett_sales)
> correlation
[1] 0.9999984

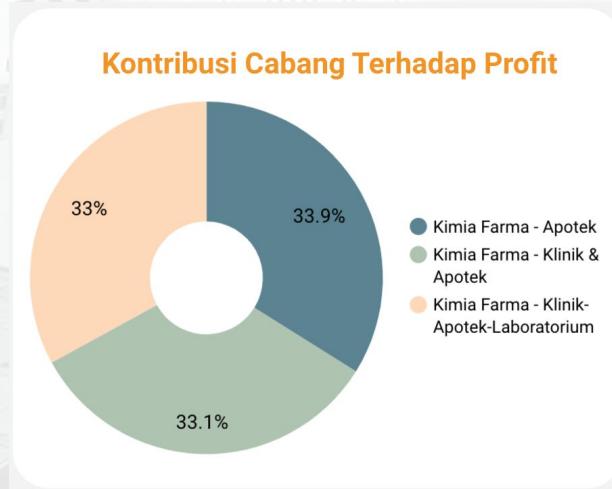
```

Correlation: Branch Count vs. Total Net Sales



The data points align almost perfectly along the red regression line, with the correlation value **0.999984** confirming an **strong positive linear** relationship between **the number of Branches and Nett Sales**

4. Dashboard Performance Analytics



The **top-performing branches** are located in Ambon, Magelang, Pematangsiantar, Mataram, and Semarang,

Analyze the operational strategies, customer engagement, and local market conditions of the top branches and **implement the successful approaches in branches with lower performance.**

The three types of branches (Apotek, Klinik & Apotek, and Klinik-Apotek-Laboratorium) contribute **almost equally** to the total profit, with percentages around 33% each.

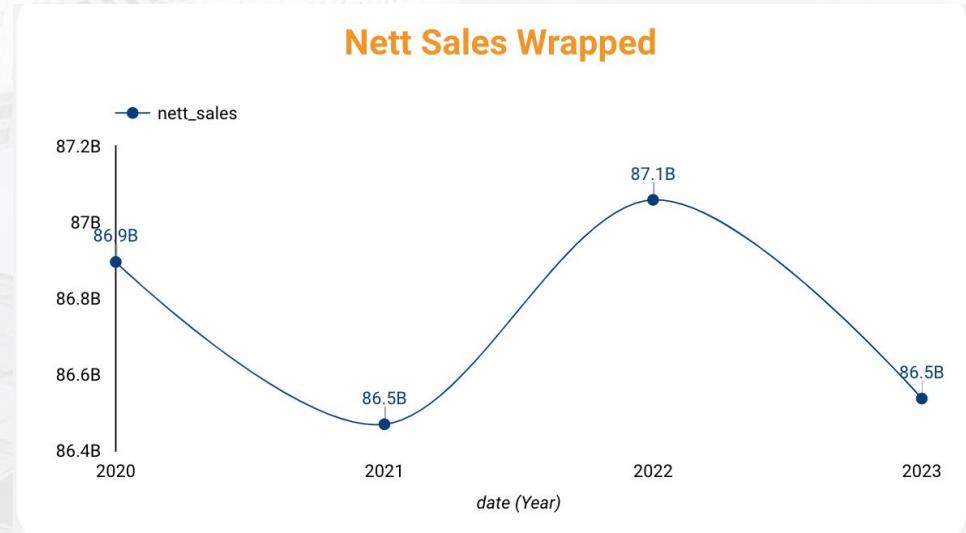
This suggests a **balanced performance** across different branch models

We're adding the more specific chart with Branch ID and Branch Name in the Top 5 with highest Profit

Top 5 Branch dengan Profit Tertinggi

Cabang	Kota	Profit ▾
1. 53167 - KAL	Ambon	68.2M
2. 19393 - KA	Magelang	68M
3. 88378 - KA	Pematangsiantar	67.6M
4. 53721 - A	Mataram	67.6M
5. 23647 - A	Semarang	67.4M

4. Dashboard Performance Analytics



Recommendation

The increase in 2022 suggests potential opportunities. Identifying **what drove this growth** (e.g., increased investment, policy changes) and **strengthening these factors** can sustain upward trends

Implement data-driven decision-making by closely monitoring trends and using **forecasting models** to anticipate downturns and take proactive measures.

The data shows **fluctuations** in the measured value over four years. The ups and downs indicate a lack of consistent growth

The decline in 2021 and 2023 suggests possible economic or external factors affecting stability, while the increase in 2022 may indicate a temporary recovery. **Further analysis** is needed to determine the **underlying causes** of these variations.

Thank You

