

Performance Analytics

Analisis Kinerja Bisnis Kimia Farma Tahun 2020-2023

Kimia Farma - Big Data Analytics

Presented by

Anandha Krishna



I G A G Ngurah Anandha Krishna, B.Sc.

Ex Project Assistant in IT Consultant | Jobseeker

A 3 years experienced former Project Assistant for IT Consultant and Research Assistant in Berlin, Germany with a Bachelor's Degree in Transportation Planning from Technical University Berlin.

With skills in Project Management, Research, Financial Analysis, and further SQL and Business Intelligence, together we can fulfill our goals in creating a sustainable and developed Indonesia.



Jakarta Utara



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About Company

PT Kimia Farma Tbk is a state-owned company operating within the pharmaceutical industry in Indonesia and several other countries.

One of the first companies that became Kimia Farma was established by the colonial Dutch East Indies government in 1817, initiating a long tradition as the first and oldest pharmaceutical company in Indonesia.

In 1958, the Indonesian government nationalized several Dutch-owned companies and merged these companies into the PNF Bhinneka Kimia Farma, the direct predecessor of PT Kimia Farma.

With a long history of tradition and expertise gathered in hundreds of years, Kimia Farma has grown into an integrated healthcare company, supporting Indonesia's development within its role in fostering healthy Indonesians.



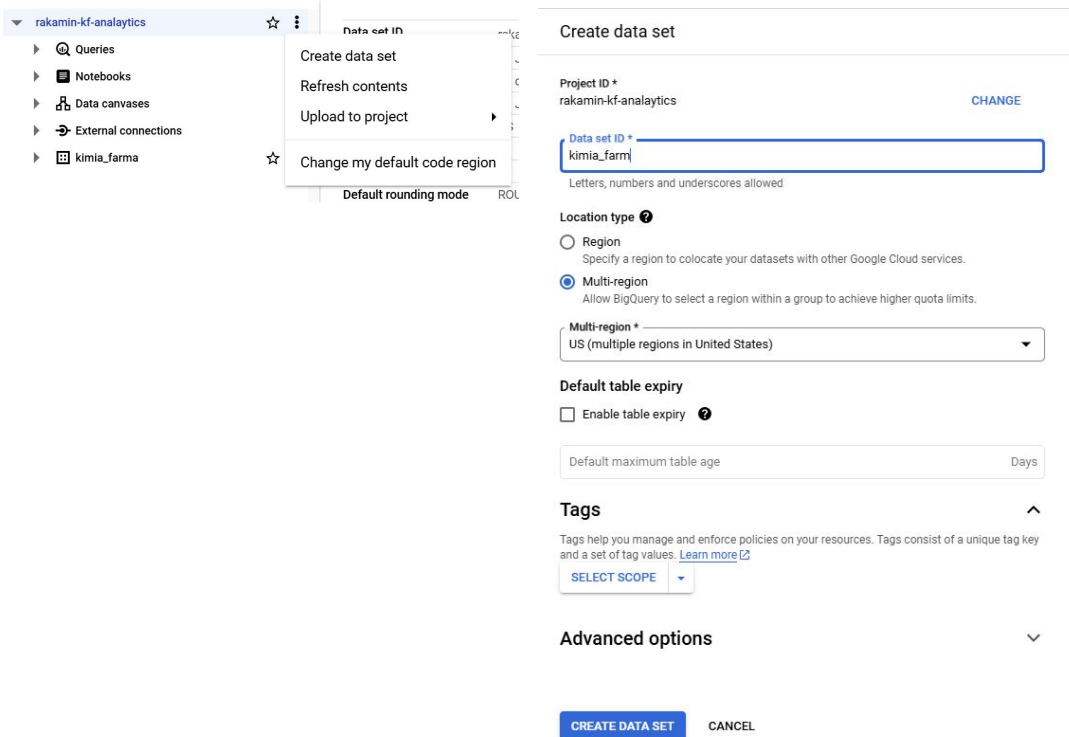
Project Portfolio

As a business, Kimia Farma has managed to operate between 2020-2023 across Indonesia, selling various kinds of products and amass a huge amount of data associated with the sale of these products.

Therefore, there is a necessity for a Big Data Analytics Intern at Kimia Farma to understand and analyse these data associated with the sale of products, and further evaluate the business performance of Kimia Farma between 2020-2023.

One of the supporting tools to help evaluate business performance of companies with huge amount of data is a business intelligence dashboard. Therefore, a dashboard is created with the aim to visualize the collected data and present findings related to the business performance.

1. Importing Dataset to BigQuery



The screenshot shows the BigQuery Studio interface. On the left, the 'rakamin-kf-analytics' project is selected. A dropdown menu is open, showing options: 'Create data set', 'Refresh contents', 'Upload to project', and 'Change my default code region'. The 'Create data set' option is highlighted. The main panel shows the 'Create data set' dialog. The 'Project ID' is 'rakamin-kf-analytics'. The 'Data set ID' field contains 'kimia_farm'. The 'Location type' is set to 'Multi-region' with 'US (multiple regions in United States)' selected. The 'Default table expiry' is set to 'Default maximum table age'. The 'Tags' section is collapsed. The 'Advanced options' section is also collapsed. At the bottom, there are 'CREATE DATA SET' and 'CANCEL' buttons.

▼ rakamin-kf-analytics ☆ ⋮

- Queries
- Notebooks
- Data canvases
- External connections
- kimia_farma

☆ Change my default code region

Default rounding mode ROL

Data set ID

Create data set

Refresh contents

Upload to project

Change my default code region

Default rounding mode ROL

Create data set

Project ID *
rakamin-kf-analytics [CHANGE](#)

Data set ID *
kimia_farm

Letters, numbers and underscores allowed

Location type ⓘ

☐ Region
Specify a region to colocate your datasets with other Google Cloud services.

☒ Multi-region
Allow BigQuery to select a region within a group to achieve higher quota limits.

Multi-region *
US (multiple regions in United States) ▼

Default table expiry

☐ Enable table expiry ⓘ

Default maximum table age Days

Tags ^

Tags help you manage and enforce policies on your resources. Tags consist of a unique tag key and a set of tag values. [Learn more](#) ⓘ

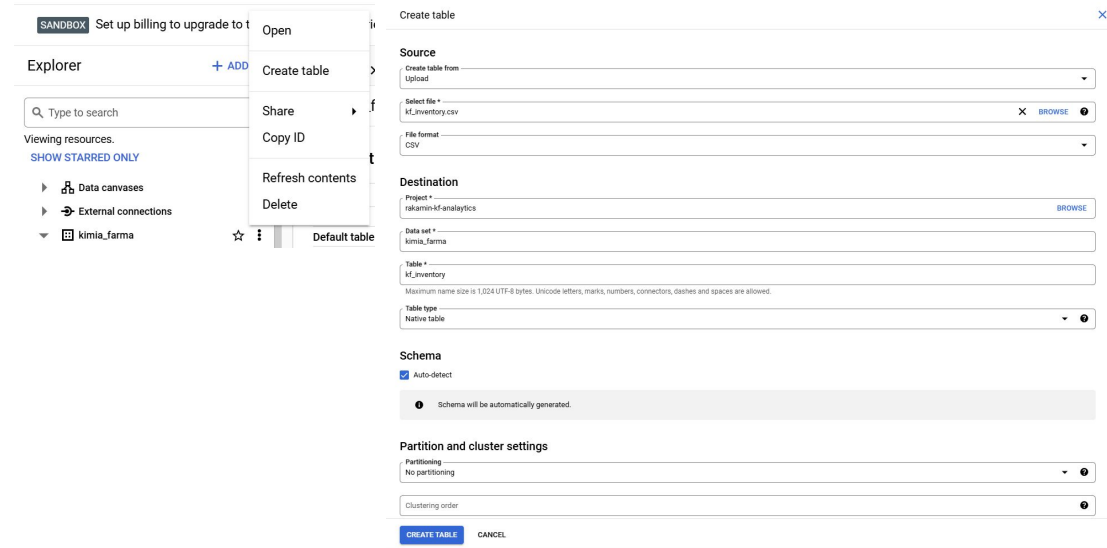
[SELECT SCOPE](#) ▼

Advanced options ▼

[CREATE DATA SET](#) [CANCEL](#)

1. Choose the appropriate project in BigQuery Studio
2. Click the three dot button beside the project name
3. Type the data set name in the 'Data set ID' field
4. Click the 'Create Data Set' button to create the Data Set

1. Importing Dataset to BigQuery



SANDBOX Set up billing to upgrade to t

Explorer + ADD

Q Type to search

Viewing resources.

SHOW STARRED ONLY

► Data canvases

► External connections

▼ kimia_farma

☆ Default table

Open

Create table

Share

Copy ID

Refresh contents

Delete

Create table

Source

Create table from

Upload

Select file *

kf_inventory.csv X BROWSE

File format

CSV

Destination

Project *

rakamin-kf-analytics BROWSE

Data set *

kimia_farma

Table *

kf_inventory

Maximum name size is 1,024 UTF-8 bytes. Unicode letters, marks, numbers, connectors, dashes and spaces are allowed.

Table type

Native table

Schema

☒ Auto-detect

Schema will be automatically generated.

Partition and cluster settings

Partitioning

No partitioning

Clustering order

CREATE TABLE CANCEL

1. Choose the appropriate data set ('kimia_farma') in BigQuery Studio
2. Click the three dot button beside the data set name
3. Choose the source of the dataset in 'Create table from'
4. Select the file
5. Type the table name in the 'Table' field
6. Click the Auto-detect box in Schema
7. Click the create table button

2. Analysis Table

Data Snapshot

transaction_id	d	br	br	kota	prov	rating	custo	product	product	price	discount_per	persentase_la	nett_sales	nett_profit	rating_transaksi
1. TRX9999998	13	24	Ki	Kun	Jawa	4	Wendy	KF151	Other ana	723800	0.09	0.3	658658	151998.00000000006	4.1
2. TRX9999995	7	40	Ki	Sam	Kali	4.9	Michae	KF519	Other ana	626400	0.03	0.3	607608	169128	3.8
3. TRX9999980	12	75	Ki	Yog	Di Yo	4	Ronald	KF629	Anti-infla	273900	0.08	0.2	251988	32868	4.2
4. TRX9999977	21	91	Ki	Banj	Kali	4.5	David	KF201	Anti-infla	78400	0.13	0.15	68208	1568	5
5. TRX9999966	23	55	Ki	Ban	Jawa	4.3	Debora	KF513	Psycholep	665800	0.01	0.3	659142	193082.00000000006	4.7
6. TRX9999961	2	65	Ki	Suk	Jawa	4.4	Jared L	KF178	Other ana	877500	0.03	0.3	851175	236925	3.6
7. TRX9999959	25	25	Ki	Pur	Jawa	4.6	Lori Wil	KF679	Psycholep	924800	0.09	0.3	841568	194208	4.8
8. TRX9999958	31	18	Ki	Mak	Sula	4.9	Joseph	KF605	Anti-infla	164900	0.06	0.2	155006	23086	4.5
9. TRX9999949	1	56	Ki	Cor	Coro	4	Brian	KF879	Antihista	441000	0.02	0.25	432180	101430	4.3
10. TRX9999938	18	32	Ki	Carut	Jawa	4.3	Julia M	KF710	Antihista	958000	0.03	0.3	929260	258660	3.5
11. TRX9999922	5	36	Ki	Mak	Sula	4.3	Jennife	KF829	Drugs for	76900	0	0.15	76900	11535	3.5
12. TRX9999902	7	20	Ki	Sub	Jawa	4.1	Jeremy	KF485	Psycholep	300800	0	0.25	300800	75200	3.3
13. TRX9999868	3	43	Ki	Sura	Jawa	4.6	Janice	KF878	Psycholep	533500	0.09	0.3	485485	112035	4.6

1 - 100 / 672458 < >

- Data from various datasets were merged into 16 columns
- Data for 13 columns were directly taken from other datasets, the remaining 3 (**persentase_laba_gross**, **nett_sales**, and **nett_profit**) were calculated
- Snapshot taken from Google Data Studio

3. BigQuery Syntax

```
Query History
1  create table kimia_farma.kf_analisis as
2  select
3  *
4  from
5  (
6  select
7  ft.transaction_id, ft.date, ft.branch_id, kc.branch_name, kc.kota,
8  kc.provinsi, kc.rating as rating_kantor_cabang, ft.customer_name,
9  ft.product_id, p.product_name, ft.price, ft.discount_percentage,
10 case
11   when ft.price <= 50000 then 0.1
12   when ft.price <= 100000 then 0.15
13   when ft.price <= 300000 then 0.2
14   when ft.price <= 500000 then 0.25
15   else 0.3
16 end as persentase_laba_brutto,
17 (ft.price-(ft.price*ft.discount_percentage)) as nett_sales,
18 (ft.price-(ft.price*ft.discount_percentage)-
19  (ft.price *
20   case
21    when ft.price <= 50000 then 1-0.1
22    when ft.price <= 100000 then 1-0.15
23    when ft.price <= 300000 then 1-0.2
24    when ft.price <= 500000 then 1-0.25
25    else 1-0.3
26   end
27 )) as nett_profit,
28 ft.rating as rating_transaksi
29
30 from kimia_farma.kf_final_transaction ft
31 left join
32 kimia_farma.kf_kantor_cabang kc
33 on
34 ft.branch_id = kc.branch_id
35 left join
36 kimia_farma.kf_product p
37 on ft.product_id = p.product_id
38 order by ft.branch_id asc
39 )
40 ;
```

Overall Strategy:

1. (In another media) plan for the overall syntax, determine columns that can be directly filed using data available from the datasets.
2. Start to create and test the join syntax to fill the 13 columns with available data.
3. Determine that two of the remaining blank columns require special categorization
 - a. **Persentase_laba_brutto**: create case when syntax for the required categories

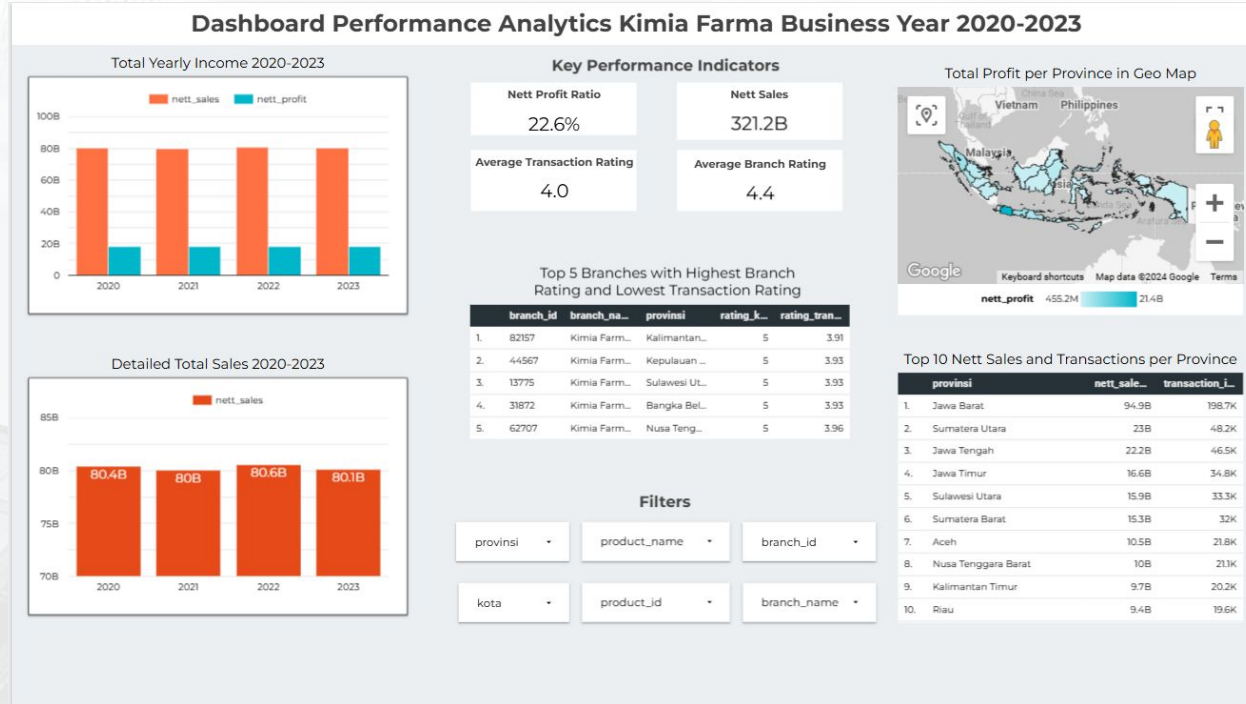
3. BigQuery Syntax

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2  select
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8  kc.provinsi, kc.rating as rating_kantor_cabang, ft.customer_name,
9  ft.product_id, p.product_name, ft.price, ft.discount_percentage,
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15   else 0.3
16 end as persentase_laba_brutto,
17 (ft.price-(ft.price*ft.discount_percentage)) as nett_sales,
18 (ft.price-(ft.price*ft.discount_percentage)-
19  (ft.price *
20   case
21    when ft.price <= 50000 then 1-0.1
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25    else 1-0.3
26   end
27  )) as nett_profit,
28 ft.rating as rating_transaksi
29
30 from kimia_farma.kf_final_transaction ft
31 left join
32 kimia_farma.kf_kantor_cabang kc
33 on
34 ft.branch_id = kc.branch_id
35 left join
36 kimia_farma.kf_product p
37 on ft.product_id = p.product_id
38 order by ft.branch_id asc
39 )
40 ;
```

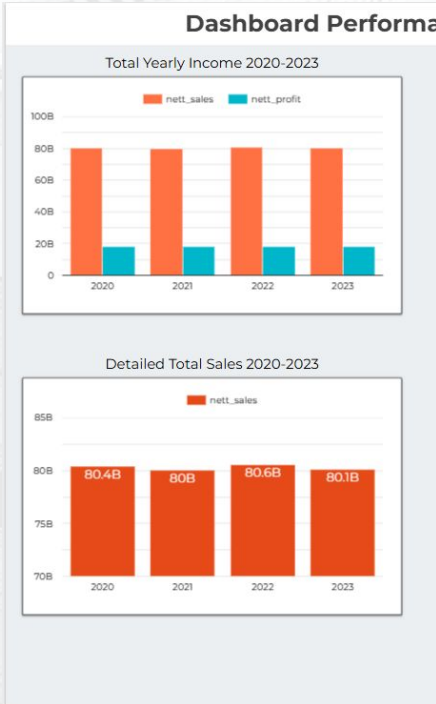
Overall Strategy:

1. Determine that two of the remaining blank columns require special categorization
 - a. **Nett_sales**: calculate using the following formula $[Price - (Price * discount_percentage)]$
 - b. **Nett_profit**: calculate using the following formula $[Nett_sales - (Price * (1 - persentase_laba_brutto))]$
2. The join queries were put in a subquery, for testing and further analysis purposes
3. Creation of the create table syntax that takes data from the subquery

4. Dashboard Performance Analytics



4. Dashboard Performance Analytics



Analysis:

- Overall strong performance throughout 2020-2023
- Nett sales and nett profit remains relatively stable in 4 years
- Differences in nett sales and nett profit between 2020-2023 are negligible

4. Dashboard Performance Analytics

Performance Analytics Kimia Farma Business

Key Performance Indicators

Nett Profit Ratio

22.6%

Nett Sales

321.2B

Average Transaction Rating

4.0

Average Branch Rating

4.4

Top 5 Branches with Highest Branch Rating and Lowest Transaction Rating

	branch_id	branch_na...	provinsi	rating_k...	rating_tran...
1.	82157	Kimia Farm...	Kalimantan...	5	3.91
2.	44567	Kimia Farm...	Kepulauan ...	5	3.93
3.	13775	Kimia Farm...	Sulawesi UT...	5	3.93
4.	31872	Kimia Farm...	Bangka Bel...	5	3.93
5.	62707	Kimia Farm...	Nusa Teng...	5	3.96

Filters

provinsi

product_name

branch_id

kota

product_id

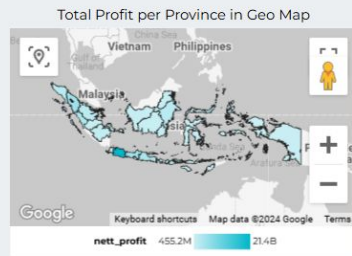
branch_name

Analysis:

- Key Performance Indicators for business performance analysis summary
- Nett Profit Ratio of 22,6%
- Average Branch Rating higher than Average Transaction Rating, requiring further analysis on the customer experience
- Several branches have excellent branch ratings but < 4 average transaction ratings
- Several filters for specialized analysis, these filters will affect all indicators

4. Dashboard Performance Analytics

Business Year 2020-2023



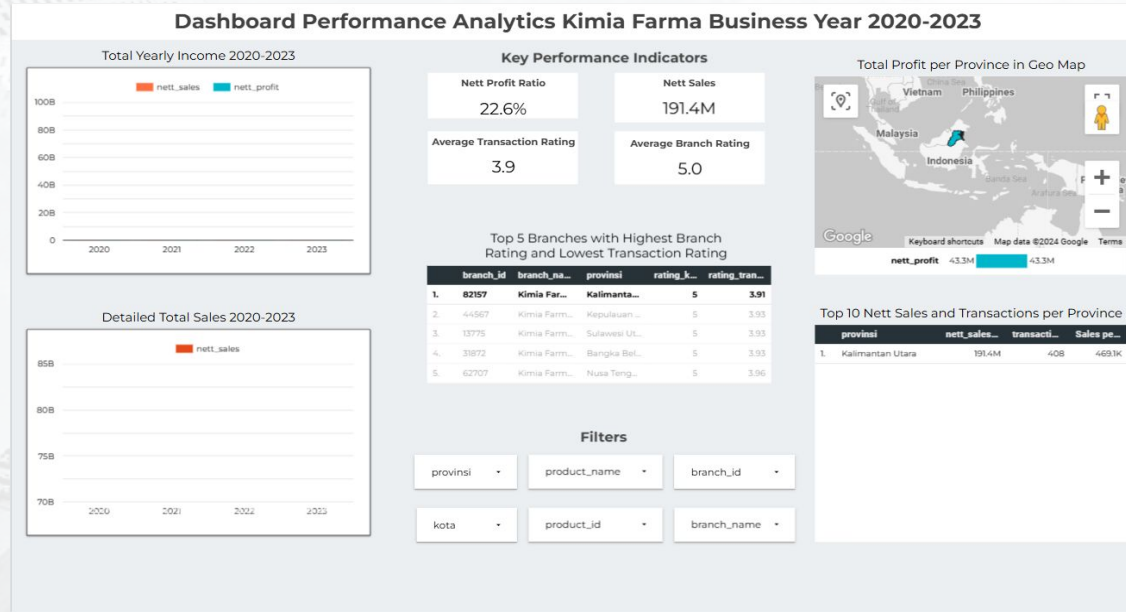
Top 10 Nett Sales and Transactions per Province

	provinsi	nett_sales...	transacti...	Sales pe...
1.	Jawa Barat	94.9B	198.7K	477.4K
2.	Sumatera Utara	23B	48.2K	476.4K
3.	Jawa Tengah	22.2B	46.5K	478.5K
4.	Jawa Timur	16.6B	34.8K	478.3K
5.	Sulawesi Utara	15.9B	33.3K	477K
6.	Sumatera Barat	15.3B	32K	478.4K
7.	Aceh	10.5B	21.8K	479.6K
8.	Nusa Tenggara Barat	10B	21.1K	476.4K
9.	Kalimantan Timur	9.7B	20.2K	479.9K
1.	Riau	9.4B	19.6K	477.1K

Analysis:

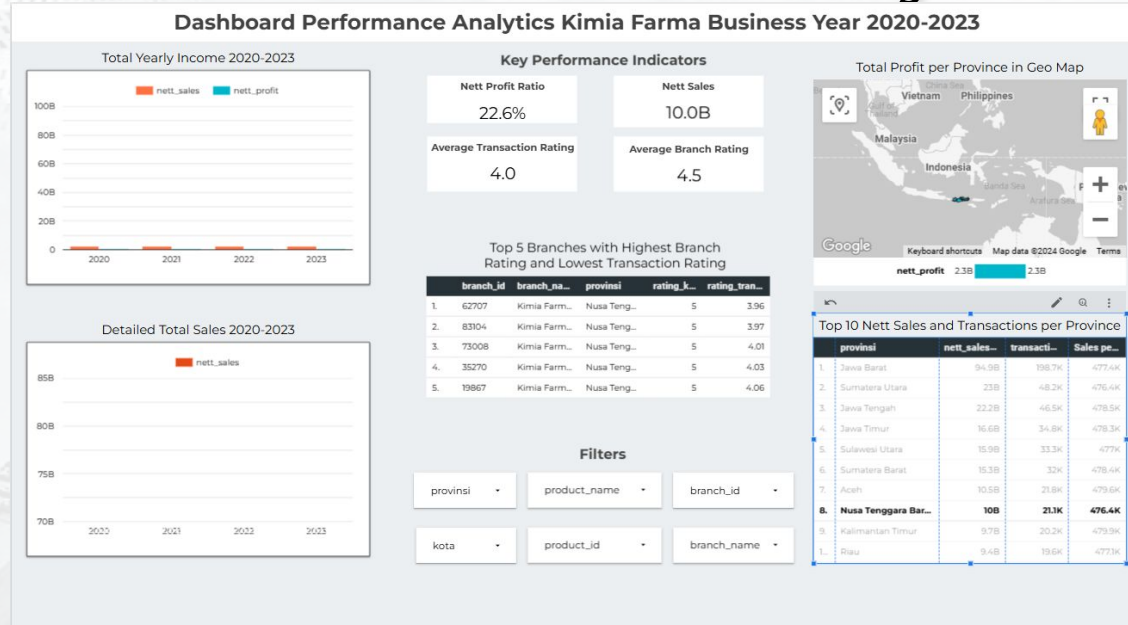
- Geo Map helps fast analysis on the areas with highest total profit for the company
- Jawa Barat has both the highest nett sales and transaction frequency, remains a strong market for Kimia Farma
- Nett sales and transaction frequency are linked together, with almost uniform sales per transaction

4. Dashboard Performance Analytics



- Possible direct filtering in clicking the desired indicator
- In this example, the branch ID 82517 was clicked
- Returning to default state would only require a click on the same field

4. Dashboard Performance Analytics



- Possible direct filtering in clicking the desired indicator
- In this example, the province Nusa Tenggara Barat was clicked
- Returning to default state would only require a click on the same field

4. Dashboard Performance Analytics

Dashboard Performance Analytics Kimia Farma Business Year 2020-2023

Data Snapshot

	transaction_id	d...	br...	br...	kota	prov...	rating...	custo...	product...	product...	price	discount_per...	percentase_la...	nett_sales	nett_profit	rating_transaksi
1.	TRX9999998	13..	24..	Kl..	Kurt..	Jawa...	4	Wendy...	KF131	Other ana...	723800	0.09	0.3	658658	151998.000000000006	4.1
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3.	TRX9999980	12..	75..	Kl..	Yog..	Di Yo...	4	Ronald ...	KF629	Anti-infla...	273900	0.08	0.2	251988	32868	4.2
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9.	TRX9999949	1..	56..	Kl..	Gor...	Coro...	4	Brian ...	KF879	Antihista...	441000	0.02	0.25	432180	101430	4.3
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11.	TRX9999922	5..	36..	Kl..	Mak..	Sula...	4.3	Jennife...	KF829	Drugs for ...	76900	0	0.15	76900	11535	3.5
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Links

Google Drive Video

https://drive.google.com/drive/folders/1j_6FW-HAMFqZ1d6TCohH66eOAbkQJMn5E?usp=sharing

Github

[nandosian/Big-Data-Analytics-Challenge-: Dibuat untuk tugas akhir Project Bashed Internship Data Analytics Kimia Farma di Rakamin Academy. \(github.com\)](https://github.com/nandosian/Big-Data-Analytics-Challenge-)

Thank You



Rakamin
Academy

