Rakamin Academy X kimia farma

Performance Analytics Business Year 2020-2023

Kimia Farma - Big Data Analytics

Presented by
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Dzaky Hilal Ramdhan Wahidi

My name is Dzaky Hilal Ramdhan Wahidi, people call me Dzaky. I graduated from Institut Teknologi Sepuluh Nopember majoring chemical engineering in 2021 after pursuing the degree for 4 years. Previously I worked for 3 months at PT. Sinergi Dinamika Teknologi, a laboratory equipment trading company as a Marketing Project Officer. I took RevoU minicourse before join as a Full Stack Data Analyst. While studying i worked on various projects such a identifying on why sales has drop in shipping company using linear regression, credit card approval using predictive model, KPI Dashboard, Customer Retention and segmentation analysis.

Courses and Certification

- **Kickstart Data Science Journey/Certificate of Achievement - Rakamin Academy** | <link> **May, 2024**
- **Full Stack Data Analytics/ Certificate of Achievement - RevoU** | <link> **January, 2024**
- **Intro to Data Analytics/ Certificate of Completion - RevoU** | <link> **August 2023**

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About Company

PT Kimia Farma Tbk is a subsidiary of Bio Farma that operates in the pharmaceutical sector. To support its business activities, by the end of 2020, the company owned 12 factories, 1,278 pharmacies, 451 health clinics, 75 clinical laboratories, 10 optical stores, and 3 beauty clinics spread throughout Indonesia. The company also has 18 retail outlets in Saudi Arabia. Pharmaceutical preparations and raw materials produced by the company have also been exported to India, Malaysia, the Maldives, Kenya, Yemen, Hong Kong, and the Philippines.

Project Portfolio

Rakamin Academy

Background

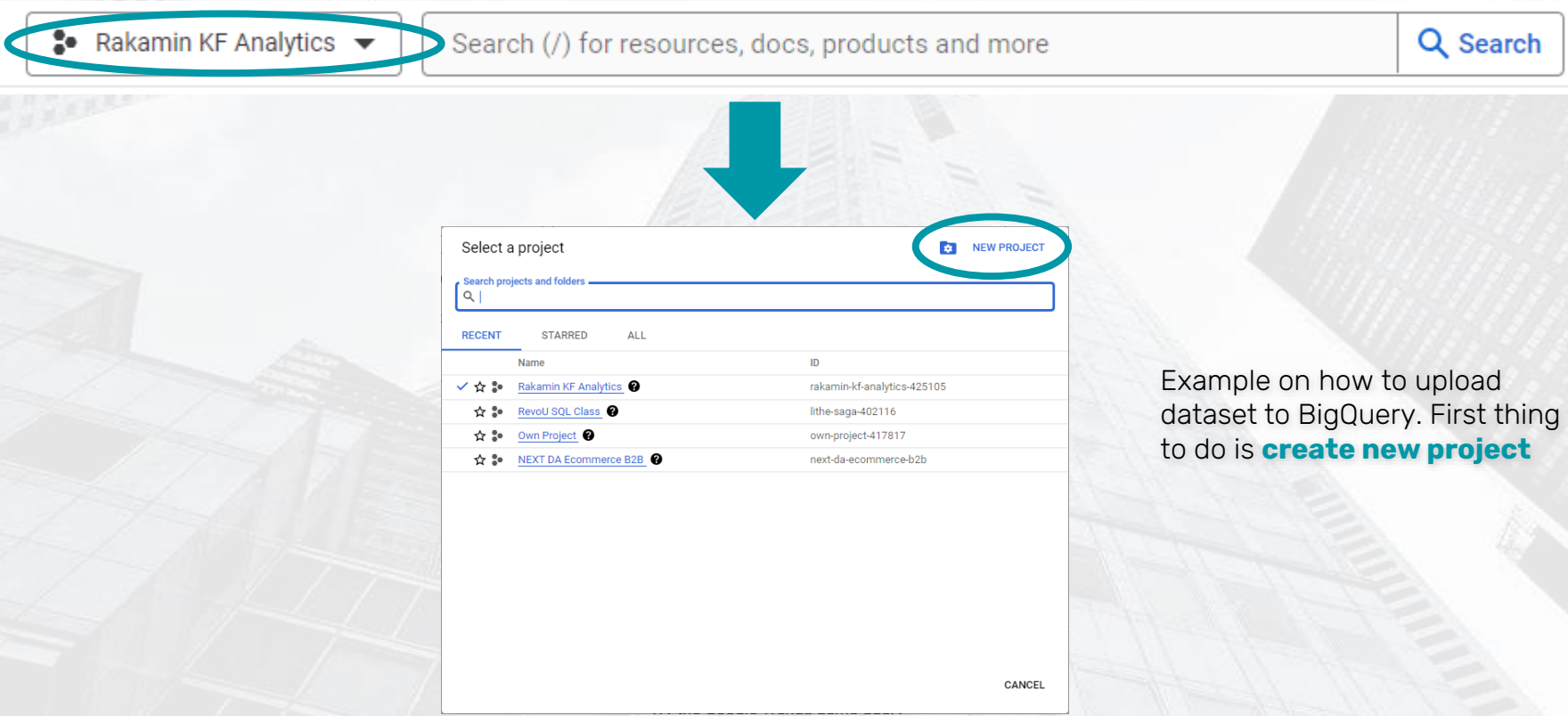
As a Big Data Analytics Intern at Kimia Farma, the tasks will encompass a range of challenges that require a deep understanding of data and analytical skills. One of the main projects will be to evaluate Kimia Farma's business performance from 2020 to 2023.

Objective

1. To create analysis table from the raw data
2. To create KPI Dashboard and analyze the market trend and branch performance.

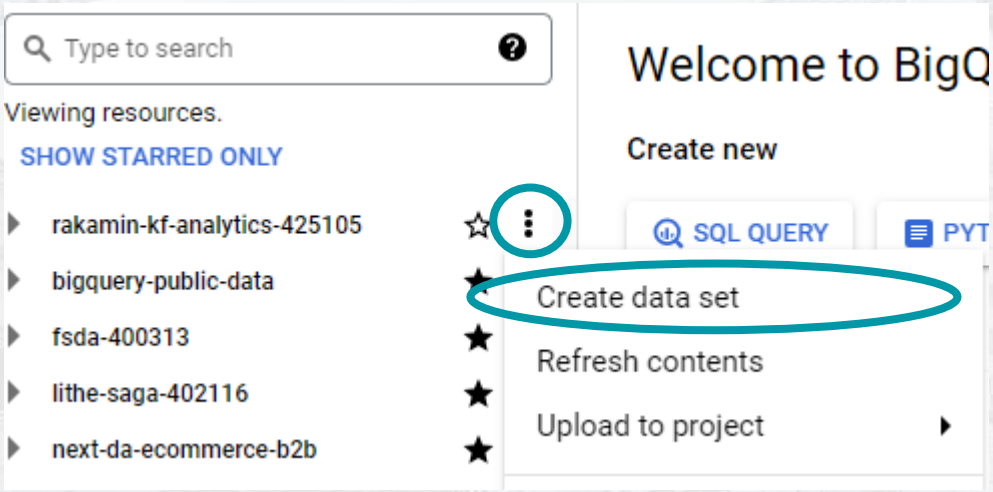
Project explanation video here!

1. Importing Dataset to BigQuery



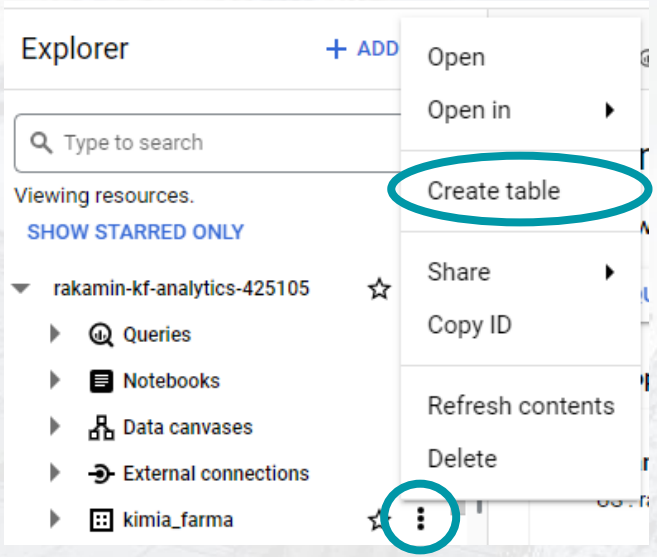
Example on how to upload dataset to BigQuery. First thing to do is **create new project**

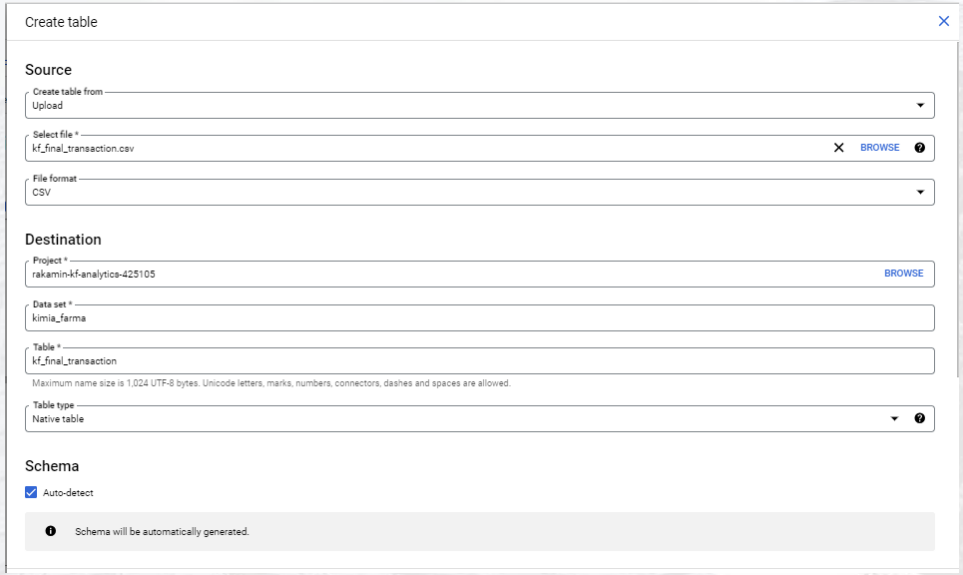
1. Importing Dataset to BigQuery



Next we can **create the data set**, on this part we can just fill the name of the data set and then select create dataset

1. Importing Dataset to BigQuery





On this case using **auto detect** on schema to make it easier since the data is in good condition

1. Importing Dataset to BigQuery

Row	transaction_id	date	branch_id	customer_name	product_id	price	discount_percentage	rating
1	TRX5103706	2021-08-25	93529	Derrick Wright III	KF116	251700	0.1	3.0
2	TRX5388139	2020-12-29	24832	Elizabeth Ramos	KF116	251700	0.12	3.0
3	TRX7251897	2020-02-03	20505	Meghan Warner	KF116	251700	0.09	3.0
4	TRX4943675	2022-09-09	17678	Steven Roberts	KF116	251700	0.1	3.0
5	TRX3469820	2020-06-20	28315	Linda Bruce DDS	KF116	251700	0.07	3.0
6	TRX1213133	2021-09-17	22280	Cory Castro	KF116	251700	0.11	3.0
7	TRX2020131	2020-12-16	40028	Stephanie Boone	KF116	251700	0.03	3.0
8	TRX5015870	2022-08-17	41343	Mary Hughes	KF116	251700	0.03	3.0
9	TRX7064077	2021-06-21	86546	Tamara Bruce	KF116	251700	0.04	3.0
10	TRX5979742	2020-12-31	18235	Aaron Reed	KF116	251700	0.11	3.0
11	TRX2209141	2021-03-20	59571	Nancy Kennedy	KF116	251700	0.1	3.0
12	TRX5385534	2023-03-17	69280	Paul Morales	KF116	251700	0.11	3.0
13	TRX9155202	2020-04-11	29626	Stephen Jones	KF116	251700	0.02	3.0
14	TRX1702542	2022-09-15	48590	Zachary White	KF116	251700	0.12	3.0
15	TRX8205780	2022-10-19	37915	Jennifer Larsen	KF116	251700	0.13	3.0

Field name	Type	Mode	Key	Collation	Default value	Policy tags	Description
transaction_id	STRING	NULLABLE	-	-	-	-	-
date	DATE	NULLABLE	-	-	-	-	-
branch_id	INTEGER	NULLABLE	-	-	-	-	-
customer_name	STRING	NULLABLE	-	-	-	-	-
product_id	STRING	NULLABLE	-	-	-	-	-
price	INTEGER	NULLABLE	-	-	-	-	-
discount_percentage	FLOAT	NULLABLE	-	-	-	-	-
rating	FLOAT	NULLABLE	-	-	-	-	-

Example of the result from the dataset that had been uploaded

2. BigQuery Syntax

```sql
CREATE TABLE rakamin-kf-analytics-425105.kimia_farma.kf_analysis AS

WITH ft as
(
  SELECT
    transaction_id,
    date as transaction_date,
    branch_id as branch_id,
    customer_name as customer_name,
    product_id as product_id,
    discount_percentage as discount,
    (price - (price * discount_percentage)) as nett_sales,
    CASE
      WHEN price <= 50000 THEN 0.1
      WHEN price > 50000 AND price <= 100000 THEN 0.15
      WHEN price > 100000 AND price <= 300000 THEN 0.2
      WHEN price > 300000 AND price <= 500000 THEN 0.25
      WHEN price >= 500000 THEN 0.3
    END as persentase_gross_laba,
    rating as rating_transaksi
  FROM `rakamin-kf-analytics-425105.kimia_farma.kf_final_transaction`
),

```

Using CTE to create analysis table. With CTE we can detect the wrong syntax easily. First we state **create table + location + as** to create the analysis table. Then using **CTE** to filter selected column from each raw table. Also adding some calculation based on the client request. This time we select from **transaction table.**

2. BigQuery Syntax

```
24  pr as
25  (
26    SELECT
27      *,
28      (nett_sales * persentase_gross_laba) as nett_profit
29    FROM ft
30  ),
31
32  kc as
33  (
34    SELECT
35      branch_id as branch_id,
36      branch_name as branch_name,
37      kota as kota,
38      provinsi as provinsi,
39      rating as rating_cabang,
40    FROM `rakamin-kf-analytics-425105.kimia_farma.kf_kantor_cabang`
41  ),
```

Add 1 more cte for transaction to add nett profit calculation. Do the same to the other column. This is the syntax of branch office table.

2. BigQuery Syntax

```
42
43  p as
44  (
45    SELECT
46      product_id,
47      product_name as product_name,
48      price as actual_price,
49    FROM `rakamin-kf-analytics-425105.kimia_farma.kf_product`
50  )
51
```

This is the syntax of filtering the product table

2. BigQuery Syntax

```
52  SELECT
53      pr.transaction_id,
54      pr.transaction_date,
55      pr.branch_id,
56      kc.branch_name,
57      kc.kota,
58      kc.provinsi,
59      kc.rating_cabang,
60      pr.customer_name,
61      pr.product_id,
62      p.product_name,
63      p.actual_price,
64      pr.discount,
65      pr.persentase_gross_laba,
66      pr.nett_sales,
67      pr.nett_profit,
68      pr.rating_transaksi
69  FROM pr
70  LEFT JOIN kc
71  ON pr.branch_id = kc.branch_id
72  LEFT JOIN p
73  on pr.product_id = p.product_id
```

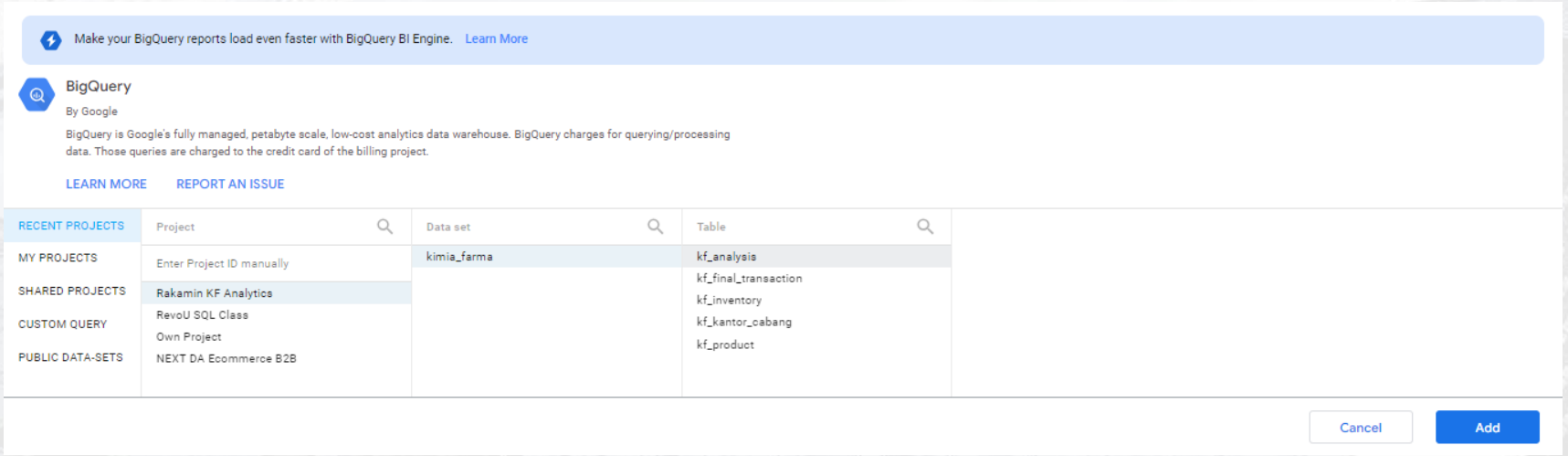
After that we **join all the CTE** using **Left Join** with **transaction table** as the primary table. This is because we made the **transaction id the primary key** of the Analysis Table

3. Analysis Table

Row	transaction_id	transaction_date	branch_id	branch_name	kota	provinsi	rating_cabang	customer_name	product_id	product_name	actual_price	discount	persentase_gross_la	nett_sales	nett_profit	rating_transaksi
1	TRX8879002	2020-03-21	62913	Kimia Farma - Apotek	Palembang	Sumatera Selatan	4.5	Joseph Brown	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	4.0
2	TRX8246946	2022-03-31	58928	Kimia Farma - Apotek	Solok	Sumatera Barat	4.0	Dennis Bell	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	4.2
3	TRX9458685	2023-09-08	73436	Kimia Farma - Apotek	Jambi	Jambi	4.4	Stephanie Carter	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	3.3
4	TRX5022925	2021-06-10	81008	Kimia Farma - Apotek	Cilacap	Jawa Tengah	4.8	Sharon Thomas	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	3.5
5	TRX1819586	2022-06-20	58132	Kimia Farma - Apotek	Padang Sidempuan	Sumatera Utara	4.5	Alicia Wilson	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	4.3
6	TRX1054883	2022-05-01	60481	Kimia Farma - Apotek	Pekanbaru	Riau	4.1	Andrew Clark	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	4.5
7	TRX2484597	2021-05-13	96462	Kimia Farma - Apotek	Semarang	Jawa Tengah	4.1	Jesus Gibson	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	4.9
8	TRX1666930	2022-05-29	28557	Kimia Farma - Apotek	Jambi	Jambi	4.5	Christina Mathews	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	3.6
9	TRX5499666	2022-06-01	85549	Kimia Farma - Apotek	Ciamis	Jawa Barat	4.0	Jessica Lee	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	3.6
10	TRX3459292	2021-11-28	98041	Kimia Farma - Apotek	Tomohon	Sulawesi Utara	4.5	Rachel Bennett	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	3.4
11	TRX1852358	2021-06-04	84922	Kimia Farma - Apotek	Tasikmalaya	Jawa Barat	4.1	Diana Goodwin	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	3.1
12	TRX7669421	2021-05-24	72693	Kimia Farma - Apotek	Jakarta	DKI Jakarta	4.7	Scott Evans	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	4.7
13	TRX9821710	2022-07-28	52060	Kimia Farma - Apotek	Sibolga	Sumatera Utara	4.2	Robert Peters	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	4.2
14	TRX3492865	2022-05-08	48130	Kimia Farma - Apotek	Tasikmalaya	Jawa Barat	4.7	Bryan Moreno	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	4.3
15	TRX9861820	2020-04-24	73804	Kimia Farma - Apotek	Kendari	Sulawesi Tenggara	4.3	George Peck	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	3.3
16	TRX9599566	2023-07-27	65948	Kimia Farma - Apotek	Tarakan	Kalimantan Utara	4.4	April Summers	KF601	Psycholeptics drugs, Anxiolytic..	512000	0.04	0.3	491520.0	147456.0	3.1

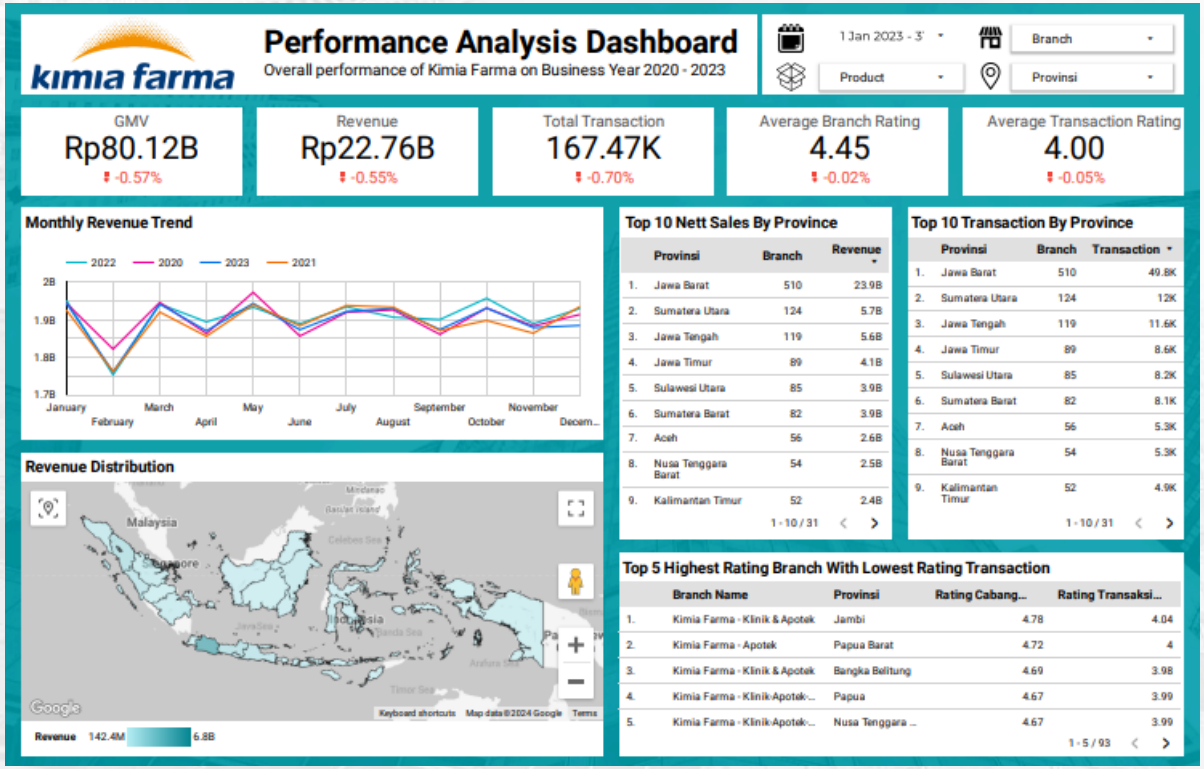
The result of the query will be like this, it contains **16 columns** (transaction_id, date, branch_id, branch_name, city, province, branch_rating, customer_name, product_id, product_name, actual_price, discount, percentage_gross_loss, nett_sales, nett_profit, and transaction_rating). And the table will be **used for creating dashboard** in Google Data Studio

4. Dashboard Performance Analytics



Before we design our dashboard the first step is to connect Google Data Studio to the datasets. In this case we will be using analysis table that we created before

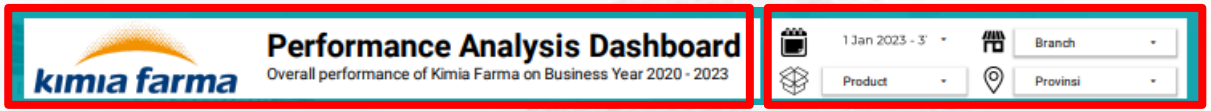
4. Dashboard Performance Analytics



The dashboard shown the performance of the company which is currently set for 2023 (It can be changed through filter).

Dashboard here!

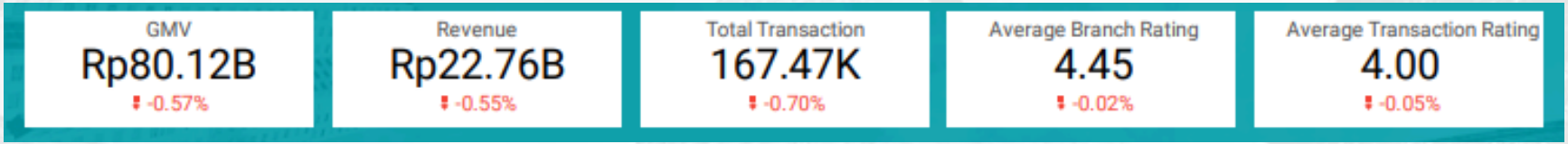
4. Dashboard Performance Analytics



Dashboard Title. It contains company's logo, the dashboard title, and summary of the dashboard

Filter. The filter that will be used is date, product name, branch name, and province

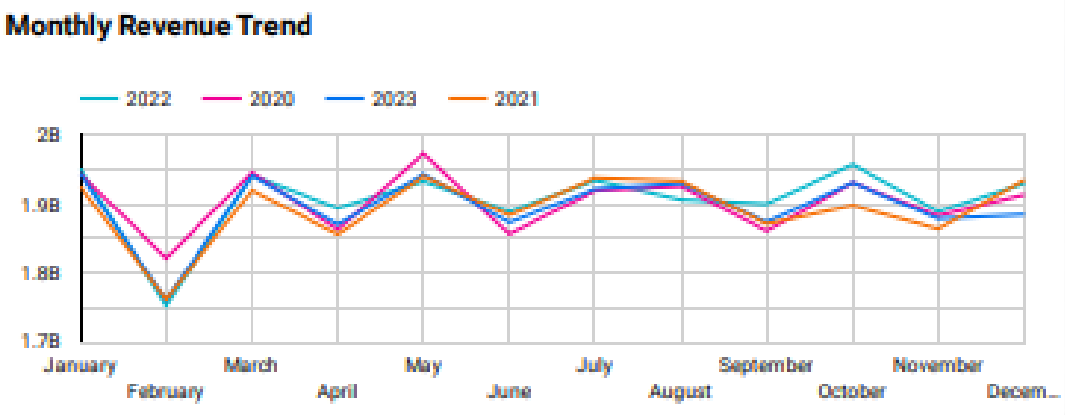
4. Dashboard Performance Analytics



Using the scorecard to monitor the performance and indicator below shown the difference to previous period.

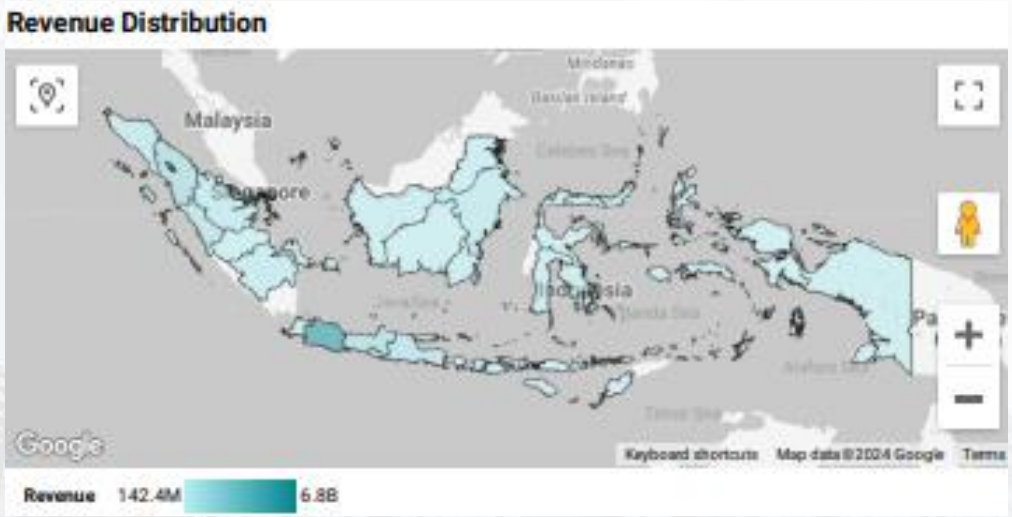
- All of the indicator showing **slight decline**.
- Our **average rating** both for **branch and transaction** are looking good (4.45/5.00 and 4.00/5.00)

4. Dashboard Performance Analytics



- The revenue trend over **past 4 years are pretty similar** with **slight decline on February** and **slightly increased on May.**

4. Dashboard Performance Analytics



- The revenue distribution is concentrated on **West Java**. While the rest of other province are pretty much have similar revenue

4. Dashboard Performance Analytics

Top 10 Nett Sales By Province

	Provinsi	Branch	Sales ▾
1.	Jawa Barat	510	94.9B
2.	Sumatera Utara	124	23B
3.	Jawa Tengah	119	22.2B
4.	Jawa Timur	89	16.6B
5.	Sulawesi Utara	85	15.9B
6.	Sumatera Barat	82	15.3B
7.	Aceh	56	10.5B
8.	Nusa Tenggara Barat	54	10B
9.	Kalimantan Timur	52	9.7B

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Top 10 Transaction By Province

	Provinsi	Branch	Transaction ▾
1.	Jawa Barat	510	49.8K
2.	Sumatera Utara	124	12K
3.	Jawa Tengah	119	11.6K
4.	Jawa Timur	89	8.6K
5.	Sulawesi Utara	85	8.2K
6.	Sumatera Barat	82	8.1K
7.	Aceh	56	5.3K
8.	Nusa Tenggara Barat	54	5.3K
9.	Kalimantan Timur	52	4.9K

1 - 10 / 31 < >

- The number of revenue and transaction also **concentrated on West Java** but if we look at the number of the branch West Java also has the **highest number of branch.**

4. Dashboard Performance Analytics

Top 5 Highest Rating Branch With Lowest Rating Transaction

	Branch Name	Provinsi	Rating Cabang...	Rating Transaksi...
1.	Kimia Farma - Klinik & Apotek	Jambi	4.78	4.04
2.	Kimia Farma - Apotek	Papua Barat	4.72	4
3.	Kimia Farma - Klinik & Apotek	Bangka Belitung	4.69	3.98
4.	Kimia Farma - Klinik Apotek -...	Papua	4.67	3.99
5.	Kimia Farma - Klinik Apotek -...	Nusa Tenggara ...	4.67	3.99

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- Altough West Java has the highest number of transaction and revenue, there's **no branch from West Java that make it to the top 5** highest branch rating.
- The highest branch rating coming from **Jambi with 4.78 rating.**

5. Insight Summary and Recommendation

Insight

1. In 2023 our performance is slightly declining than previous year
2. West Java has the highest number of transaction and revenue since it also has high number of branch
3. Despite being the highest transaction and revenue, West Java isn't in top 5 of highest branch rating, the highest branch rating coming from Jambi

Recommendation

1. Increase the service performance of branch in West Java since it has a lot of branch and making a lot of revenue. Like staff training to make our customer more pleased.
2. Give some discount on high rating branch to raise our customer number.

Thank You

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Appendix

Link

1. Analysis Table link
2. Dashboard link
3. Github link
4. Presentation Video link

Appendix

Top 5 Highest Rating Branch With Lowest Rating Transaction

	Branch Name	Provinsi	Rating Cabang...	Rating Transaksi...
41.	Kimia Farma - Klinik-Apotek-L...	Sumatera Barat	4.46	4
42.	Kimia Farma - Klinik & Apotek	Jawa Barat	4.46	4
43.	Kimia Farma - Apotek	Maluku	4.46	4.01
44.	Kimia Farma - Apotek	Nusa Tenggara B...	4.45	3.98
45.	Kimia Farma - Klinik-Apotek-L...	Bali	4.45	3.99

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West Java has low rating compared to other branch where the highest rating of the branchs is on rank 42