Rakamin Academy X kimia farma

Kimia Farma Business Performance Analytics Business Year 2020-2023

Kimia Farma - Big Data Analytics

Presented by
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kimia farma X Rakamin Academy

Haris Dwi Rahmatullah, S.Pi

AWS re/Start Graduate | Data Analytics | DB Admin | Cloud Computing

I got my bachelor degree on Aquaculture from Univeritas Airlangga in Sept 2019. As a Non IT guy who wants to break a career on tech industry, I considering myself as a polyglot. Aside from Javanese and English, I can speak Python, SQL, and basic JS and Bash

Gresik, East Java

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Haris Dwi Rahmatullah

Courses and Certification

Database Engineer | https://coursera.org/verify/professional-cert/Z72ZMCATRL3R May, 2024

Programming in Python | https://coursera.org/verify/C2BSU65G8HU7 Apr, 2024

AWS CCP | https://aws.amazon.com/verification (credential: LSL3C3GDSNQQ193B) Dec, 2023

About Company

Kimia Farma adalah perusahaan industri farmasi pertama di Indonesia yang didirikan oleh Pemerintah Hindia Belanda tahun 1817. Nama perusahaan ini pada awalnya adalah NV Chemicalien Handle Rathkamp & Co. Berdasarkan kebijaksanaan nasionalisasi atas eks perusahaan Belanda di masa awal kemerdekaan.

Pada tanggal 4 Juli 2001, PT Kimia Farma (Persero) kembali mengubah statusnya menjadi perusahaan publik, PT Kimia Farma (Persero) Tbk, dalam penulisan berikutnya disebut Perseroan. Bersamaan dengan perubahan tersebut, Perseroan telah dicatatkan pada Bursa Efek Jakarta dan Bursa Efek Surabaya (sekarang kedua bursa telah merger dan kini bernama Bursa Efek Indonesia). Berbekal pengalaman selama puluhan tahun, Perseroan telah berkembang menjadi perusahaan dengan pelayanan kesehatan terintegrasi di Indonesia. Perseroan kian diperhitungkan kiprahnya dalam pengembangan dan pembangunan bangsa, khususnya pembangunan kesehatan masyarakat Indonesia.

Project Portfolio

As a **Big Data Analytics Intern on Kimia Farma**, one of the largest pharmaceutical company on Indonesia, I want to show my data analytics skill to evaluate business performance of Kimia Farma from 2020 to 2023. It start with uploading raw data to data warehousing service such as Google BigQuery. Write SQL syntax to perform data querying. Then, connect the data to Looker Studio to make a analytical dashboard.

Analysis Table

- transaction_id : kode id transaksi,
- date : tanggal transaksi dilakukan,
- branch_id : kode id cabang Kimia Farma,
- branch_name : nama cabang Kimia Farma,
- kota : kota cabang Kimia Farma,
- provinsi : provinsi cabang Kimia Farma,
- rating_cabang : penilaian konsumen terhadap cabang Kimia Farma
- customer_name : Nama customer yang melakukan transaksi,
- product_id : kode product obat,
- product_name : nama obat,
- actual_price : harga obat,
- discount_percentage : Persentase diskon yang diberikan pada obat,
- persentase_gross_laba : Persentase laba yang seharusnya diterima dari obat dengan ketentuan berikut:
  - 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%,
- nett_sales : harga setelah diskon,
- nett_profit : keuntungan yang diperoleh Kimia Farma,
- rating_transaksi : penilaian konsumen terhadap transaksi yang dilakukan.

Dashboard

- Judul Dashboard
- Summary Dashboard
- Filter Control
- Snapshot Data
- Perbandingan Pendapatan Kimia Farma dari tahun ke tahun
- Top 10 Total transaksi cabang provinsi
- Top 10 Nett sales cabang provinsi
- Top 5 Cabang Dengan Rating Tertinggi, namun Rating Transaksi Terendah
- Indonesia's Geo Map Untuk Total Profit Masing-masing Provinsi
- Dan analisis lainnya yang dapat anda eksplorasi.

Raw Data

kf_final_transaction.csv (link),
kf_inventory.csv (link),
kf_kantor_cabang.csv (link),
kf_product.csv (link).

Tools

Google BigQuery

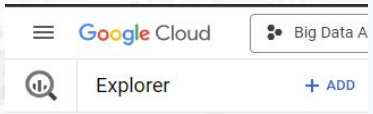
MySQL Workbench

looker

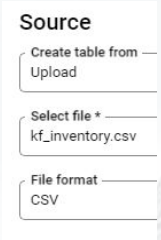
GitHub

Project explanation video here!

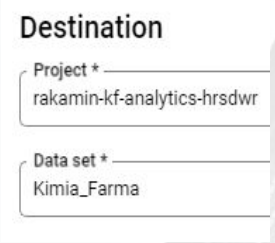
1. Importing Dataset to BigQuery



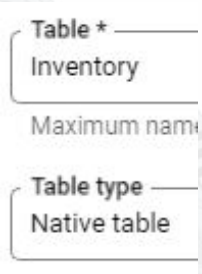
Klik tombol Add pada konsol Google Cloud, kemudian klik Local file untuk mengupload dataset



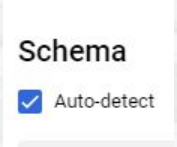
Pilih file yang akan diimport Pastikan filenya berekstensi .csv



Buat proyek dan dataset baru sesuai nama disamping



Tuliskan nama tabel dan biarkan lainnya as a default



Jangan lupa untuk mencentang opsi Auto-detect

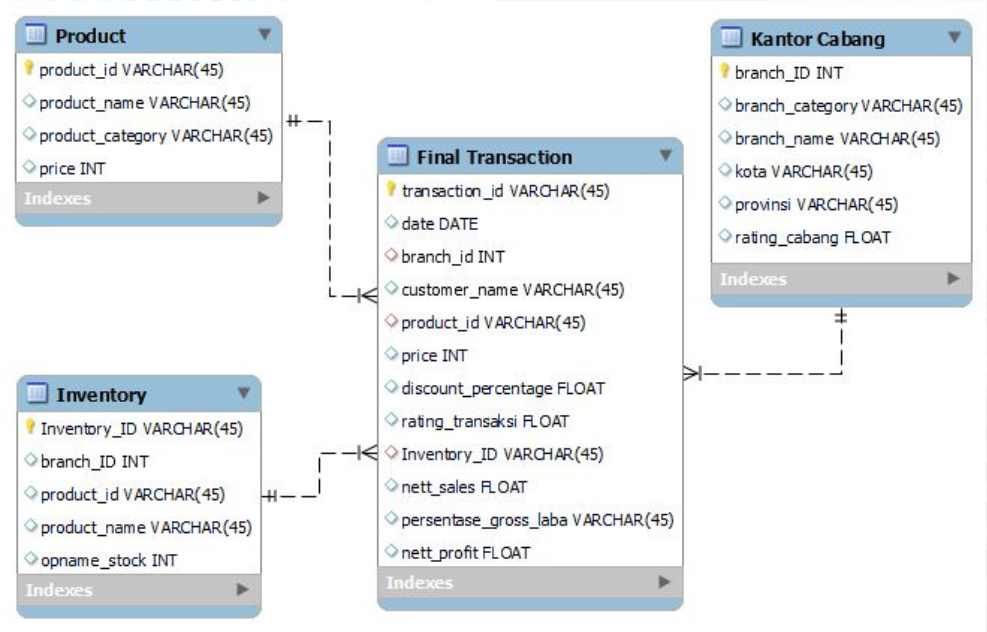
Klik CREATE TABLE untuk memfinalisasi

2. Tabel Analisa

Row	transaction_id	date	branch_id	branch_name	Kota	Provinsi	rating_cabang	customer_name	product_id	product_name	actual_price	discount_percen	persentase_gross_laba	nett_sales	nett_profit	rating_transaksi
1	TRX8154991	2021-07-10	15796	Kimia Farma - Klinik-Apotek-La...	Gorontalo	Gorontalo	4.7	Brandon Stephens	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	3.9
2	TRX4744627	2022-01-03	13467	Kimia Farma - Klinik-Apotek-La...	Surabaya	Jawa Timur	4.3	Veronica Ali	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	4.6
3	TRX7551182	2023-09-21	44068	Kimia Farma - Klinik-Apotek-La...	Banda Aceh	Aceh	4.1	Douglas Cardenas	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	3.5
4	TRX8385029	2021-04-24	84760	Kimia Farma - Klinik-Apotek-La...	Tarakan	Kalimantan Utara	4.2	Stephanie Pacheco	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	3.0
5	TRX1237925	2021-05-22	63103	Kimia Farma - Apotek	Pematangsiant...	Sumatera Utara	5.0	Michael Ruiz	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	4.2
6	TRX5131255	2020-07-04	88782	Kimia Farma - Klinik-Apotek-La...	Makassar	Sulawesi Selatan	5.0	Joseph Erickson	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	3.8
7	TRX1174200	2021-07-20	93763	Kimia Farma - Klinik-Apotek-La...	Banjarmasin	Kalimantan Selatan	4.8	Sherry Parker	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	3.7
8	TRX4163485	2023-11-07	14002	Kimia Farma - Klinik-Apotek-La...	Purwokerto	Jawa Tengah	4.5	Jason Carpenter	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	5.0
9	TRX7785155	2021-06-04	48590	Kimia Farma - Klinik & Apotek	Garut	Jawa Barat	4.9	Samuel Charles	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	4.4
10	TRX5123245	2020-01-10	96744	Kimia Farma - Klinik & Apotek	Karawang	Jawa Barat	4.9	Frank Owens	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	3.8
11	TRX8959687	2023-06-18	64892	Kimia Farma - Klinik-Apotek-La...	Bima	Nusa Tenggara Barat	4.9	Emily Boyle	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	4.4
12	TRX3458636	2021-01-10	91118	Kimia Farma - Klinik-Apotek-La...	Banjarmasin	Kalimantan Selatan	3.9	Gregory Russell	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	4.3
13	TRX6957253	2022-12-19	89772	Kimia Farma - Apotek	Langsa	Aceh	3.9	Jeffrey Hickman	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	3.7
14	TRX3501444	2023-01-06	68556	Kimia Farma - Apotek	Bekasi	Jawa Barat	4.8	Sarah Bowers	KF116	Psycholeptics drugs	251700	0.1	laba 20%	226530.0	45306.0	4.6

Activate Windows

Entity Relationship Diagram



- I created this diagram with MySQL Workbench so I know **the relationship between each table**
- I also applied **star scheme** where a central dimension table (Final Transaction) surrounded by three fact table.
- Next, I **assign Primary Key and Foreign Key** and **check the atomicity** on each table to perform **First Database Normal Form (1NF).**
- **Inventory_ID** column was added to Final Transaction and Inventory Table to give **atomicity** and reduce dependencies to perform **Second Database Normal Form (2NF)**

3. BigQuery Syntax

1. Nett Sales Column

```
-- add nett_sales column and set its data type
ALTER TABLE `rakamin-kf-analytics-hrsdwr.Kimia_Farma.Final Transaction`
ADD COLUMN nett_sales SET DATA TYPE FLOAT64;

-- update and assign value of nett_sales column
UPDATE `rakamin-kf-analytics-hrsdwr.Kimia_Farma.Final Transaction`
SET nett_sales = price - (price * discount_percentage)
WHERE nett_sales IS NULL;
```

1. Add nett_sales column by performing CREATE operation and use ALTER TABLE and ADD COLUMN command
2. Add the dataset and table where you want to add the column. Don't forget to give a single quote (') symbol
3. Use ADD COLUMN to add new column and use FLOAT64 data type
4. Perform UPDATE operation use UPDATE command, and use SET to assign the value on certain column and use WHERE clause to filter column. Here I use IS NULL as a filter column. Because I want to assign value to the empty nett_sales column.
5. Don't forget to give a semicolon (;) symbol on each code block.

NB. BigQuery and MySQL data type are little bit different. FLOAT64 is same data type as FLOAT on MySQL

2. Persentase_gross_laba Column

```
-- add persentase_gross_laba column and set its data type
ALTER TABLE `rakamin-kf-analytics-hrsdwr.Kimia_Farma.Final Transaction`
ADD COLUMN persentase_gross_laba STRING;

-- update and assign value of persentase_gross_laba column
UPDATE `rakamin-kf-analytics-hrsdwr.Kimia_Farma.Final Transaction`
SET persentase_gross_laba =
  CASE
    WHEN nett_sales < 50000 THEN 'laba 10%'
    WHEN nett_sales > 50000 AND nett_sales <100000 THEN 'laba 15%'
    WHEN nett_sales > 10000 AND nett_sales <300000 THEN 'laba 20%'
    WHEN nett_sales > 30000 AND nett_sales <500000 THEN 'laba 25%'
    ELSE 'laba 30%'
  END
WHERE persentase_gross_laba IS NULL;
```

NB. BigQuery and MySQL data type are little bit different. STRING is same data type as VARCHAR on MySQL

1. Add the column by performing CREATE operation and use ALTER TABLE and ADD COLUMN command
2. Add the dataset and table where you want to add the column. Give a single quote (') symbol.
3. Use ADD COLUMN to add a column. Use STRING data type.
4. Perform UPDATE operation use UPDATE command, and use SET to assign the value on certain column
5. Use CASE statement to perform a conditional logical operation. This command like IF-ELSE on other programming language
6. Dont't forget to give END command to show end of conditional statement.
7. Use WHERE clause to filter column. Here I use IS NULL as a filter column. Because I want to assign value to the empty column
8. Don't forget to give a semicolon (;) symbol on each code block

3. Nett_profit Column

```
-- add nett_profit column and set its data type
ALTER TABLE `rakamin-kf-analytics-hrsdwr.Kimia_Farma.Final Transaction`
ADD COLUMN nett_profit FLOAT64;

-- update and assign value of nett_profit column
UPDATE `rakamin-kf-analytics-hrsdwr.Kimia_Farma.Final Transaction`
SET nett_profit =
  CASE
    WHEN persentase_gross_laba = 'laba 10%' THEN nett_sales * 0.1
    WHEN persentase_gross_laba = 'laba 15%' THEN nett_sales * 0.15
    WHEN persentase_gross_laba = 'laba 20%' THEN nett_sales * 0.2
    WHEN persentase_gross_laba = 'laba 25%' THEN nett_sales * 0.25
    ELSE nett_sales*0.3
  END
WHERE nett_profit IS NULL;
```

1. Add the column by performing CREATE operation and use ALTER TABLE and ADD COLUMN command
2. Add the dataset and table where you want to add the column. Give a single quote (‘) symbol.
3. Use ADD COLUMN to add a column. Use FLOAT64 data type.
4. Perform UPDATE operation use UPDATE command, and use SET to assign the value on certain column
5. Use CASE statement to perform a conditional logical operation. This command like IF-ELSE on other programming language
6. Dont’t forget to give END command to show end of conditional statement.
7. Use WHERE clause to filter column. Here I use IS NULL as a filter column. Because I want to assign value to the empty column
8. Don’t forget to give a semicolon (;) symbol on each code block

NB. BigQuery and MySQL data type are little bit different. FLOAT64 is same data type as FLOAT on MySQL

4. CTE Syntax for “Table Analysis”

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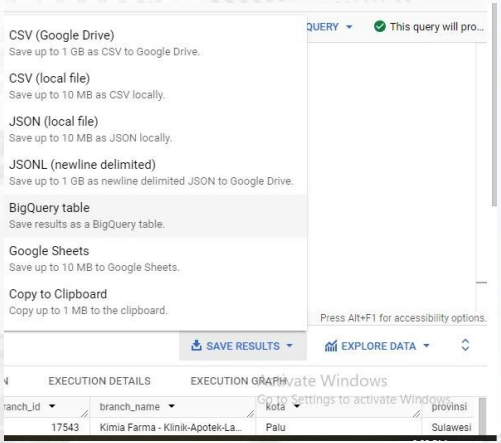
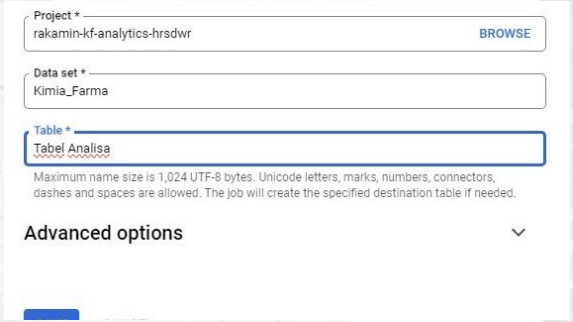
```sql
 --PERFORM THIS QUERY TO CREATE A DATAMART FOR FURTHER DATA ANALYSIS
-- USE COMMON TABLE EXPRESSION TO IMPROVE CODE READABILITY AND QUERYING PERFORMANCE
/* SINCE BIG QUERY DOESN'T ALLOW USING CREATE TABLE COMMAND WITHIN A QUERY THAT INCLUDE CTE DIRECTLY,
EXPORT THE RESULT INTO NEW TABLE USING SAVE RESULTS MENU
*/

WITH analytic_table AS (
 SELECT
 FT.transaction_id,
 FT.date,
 KC.branch_id,
 KC.branch_name,
 KC.kota as Kota,
 KC.provinsi as Provinsi,
 KC.rating AS rating_cabang,
 FT.customer_name,
 FT.product_id,
 PD.product_name,
 FT.price AS actual_price,
 FT.discount_percentage,
 FT.persentase_gross_laba,
 FT.nett_sales,
 FT.nett_profit,
 FT.rating AS rating_transaksi
 FROM
 `rakamin-kf-analytics-hrsdwr.Kimia_Farma.Final Transaction` AS FT
 LEFT JOIN
 `rakamin-kf-analytics-hrsdwr.Kimia_Farma.Kantor Cabang` AS KC
 ON
 FT.branch_id = KC.branch_id
 LEFT JOIN
 `rakamin-kf-analytics-hrsdwr.Kimia_Farma.Product` AS PD
 ON
 FT.product_id = PD.product_id
)
SELECT * FROM analytic_table; -- to retrieve all the data from the CTE command
```

5. Create New Table from CTE



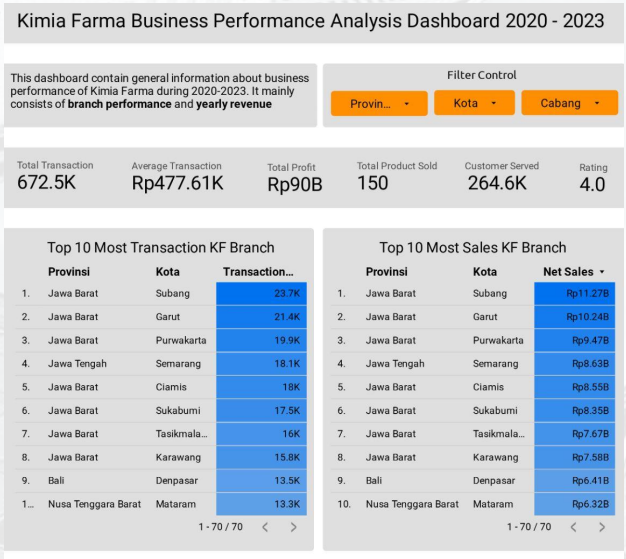
1. Use “Save results” menu to export the result from CTE command. Then choose “BigQuery table”

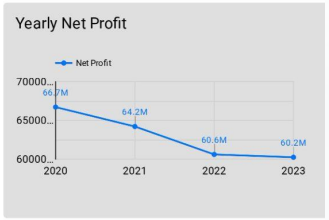


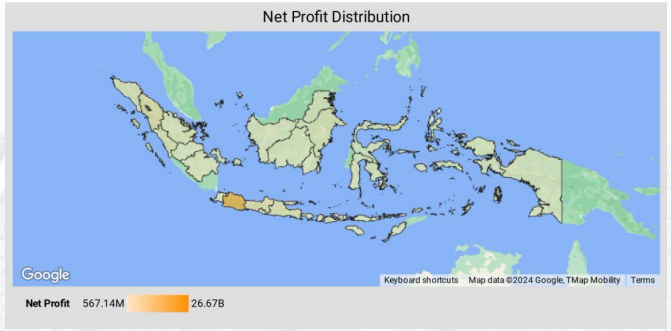
2. Fill the Project, Data set and Table name. Then finalize by choose “Save” menu

NB. Since BigQuery doesn’t support create new table directly from the query that contain CTE, export the result using “Save results” menu

4. Dashboard Performance Analytics







Rekomendasi

1. Mengingat jumlah transaksi yang cukup besar, bisa melakukan up-selling dan cross-selling kepada existing customer untuk meningkatkan net profit di tahun 2024
2. Jumlah unique customer yang dilayani masih cukup sedikit, untuk menambah net profit bisa dengan melakukan penjualan kepada customer B2B atau dengan program referall

Looker Studio Link :

https://lookerstudio.google.com/reporting/01626241-b347-4d5f-bd87-9fd7285b447f

If you reach this slide and you have any ideas or improvement for this project, you can do a pull request on my GitHub repo. Thanks a lot

https://github.com/harisdwir/Rakamin_KF_Analytics_hrsdwr

Thank You

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