Rakamin Academy X Bank Muamalat

PT Sejahtera Bersama Business Performance Analysis 2020-2021

Bank Muamalat - Business Intelligence Analyst

Presented by
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Rakamin Academy X Bank Muamalat

Haris Dwi Rahmatullah, S.Pi

AWS Certified Cloud Practitioner | 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 of JS and Bash

GitHub https://github.com/harisdwir

Gresik, East Java

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Haris Dwi Rahmatullah

Project Portfolio

As a **BI Analyst Intern**, I want to show my BI analytics skill to evaluate business performance of PT Sejahtera Bersama from 2020 to 2021. It start with cleaning raw data and upload it to data warehousing service, Google BigQuery. Write SQL syntax to perform data querying. Then, connect the data to Looker Studio to make a analytical dashboard.

Master Table

- CustomerEmail (cust_email)
- CustomerCity (cust_city)
- OrderDate (order_date)
- OrderQty (order_qty)
- ProductName (product_name)
- ProductPrice (product_price)
- ProductCategoryName (category_name)
- TotalSales (total_sales)

Raw Data

tabel Customer :
tabel Products :
tabel Orders :
tabel ProductCategory :

Dashboard

- Total keseluruhan sales
- Total keseluruhan sales berdasarkan kategori produk
- Total keseluruhan qty berdasarkan kategori produk
- Total sales berdasarkan kota
- Total qty berdasarkan kota
- Top 5 kategori produk yang paling tinggi salesnya
- Top 5 kategori produk yang paling tinggi qtynya

Tools

Google BigQuery

MySQL Workbench

looker

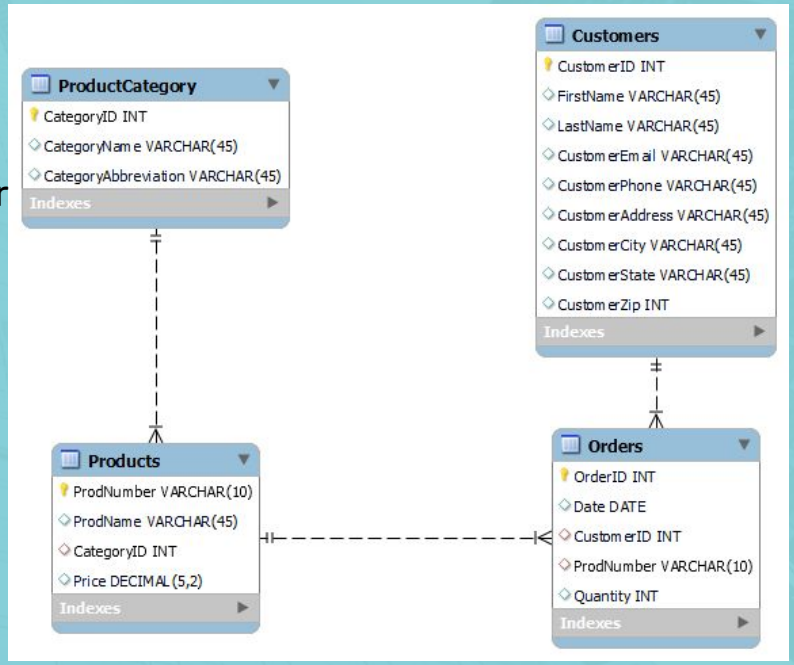
GitHub

Project explanation video here!

1. Identify Primary Key and Foreign Key

1. ProductCategory table :
   Primary Key = CategoryID
2. Products table :
   Primary Key = ProdNumber
   Foreign Key = CategoryID
3. Orders table:
   Primary Key = OrderID
   Foreign Key = CustomerID, ProdNumber
4. Customers table:
   Primary Key = CustomerID

Entity Relationship Diagram

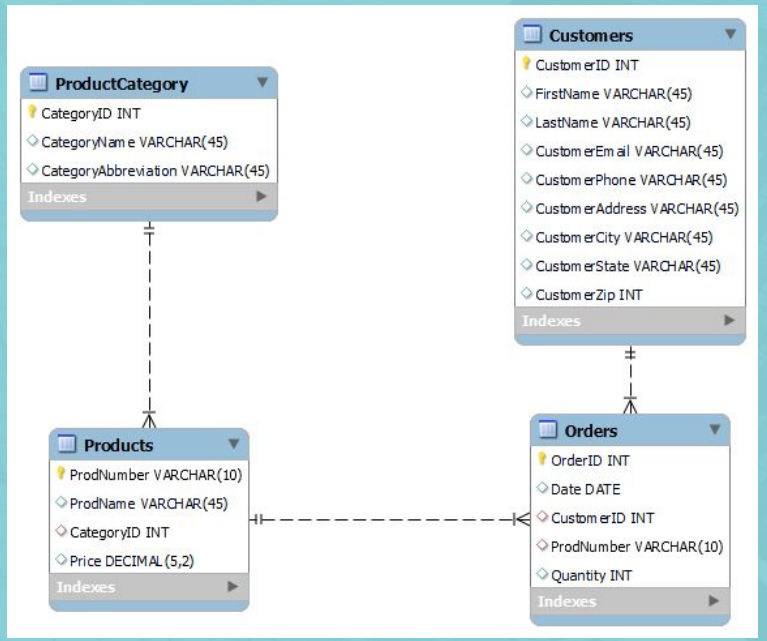


2. Identify Relationship Between Table

- Customers to Orders table relationship is one to many
- Products to Orders table relationship is one to many
- ProductCategory to Products table relationship is one to many

NB. one to many relationship indicated by the arrow on the entity relationship diagram

Entity Relationship Diagram

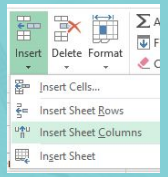


3. Create Master Table

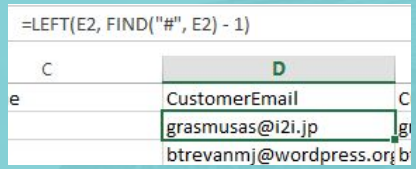
1. Data Cleaning on Excel file

CustomerEmail
grasmusas@i2i.jp#mailto:grasmusas@i2i.jp#
btrevanmj@wordpress.org#mailto:btrevanmj@wordpress.org#
tgrayston7k@pagesperso-orange.fr#mailto:tgrayston7k@pagesperso-orange.fr#

We need to remove unwanted character after “#” sign, on CustomerEmail column



Insert sheet column beside CustomerEmail column

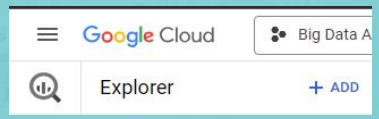


Use formula above to display the character we want

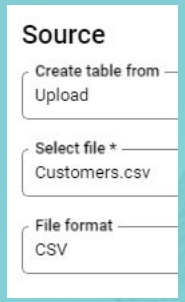
2. Data Transformation on Excel file

- Google Big Query doesn’t support .xslx extension
- Save your file as .csv extension before upload it on Big Query

3. Importing Dataset to BigQuery



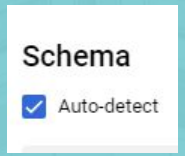
Click Add on Google Cloud console, then click Local File to upload your data



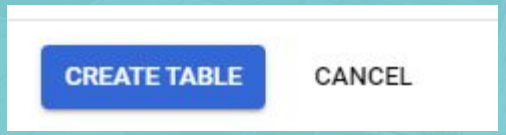
Choose your files, make sure the format is .csv

Choose your destination of the dataset

Give the name to the table and let the rest set as a default



Don't forget to tick Auto-detect schema menu



Click create table to finalize

4. BigQuery SQL Syntax

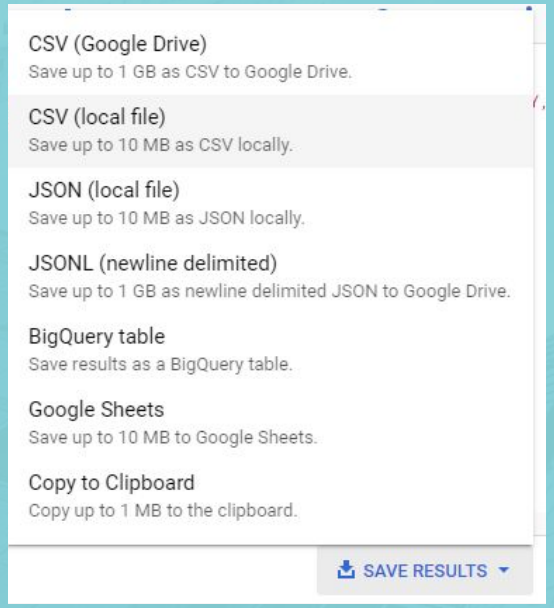
```sql
--PERFORM THIS QUERY TO CREATE A DATAMART FOR FURTHER DATA ANALYSIS
-- USE COMMON TABLE EXPRESSION TO IMPROVE CODE READABILITY AND QUERYING PERFORMANCE
/* SINCE BIG QUERY DOESN'T ALLOW USING CREATE TABLE COMMAND WITHIN A QUERY THAT INCLUDE CTE DIRECTLY,
EXPORT THE RESULT INTO NEW TABLE USING SAVE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

WITH master_table AS (
  SELECT
  O.Date AS order_date,
  PC.CategoryName AS category_name,
  P.ProdName AS product_name,
  P.Price AS product_price,
  O.Quantity AS order_qty,
  (P.Price * O.Quantity) AS total_sales,
  C.CustomerEmail AS cust_email,
  C.CustomerCity AS cust_city
  FROM
  `bi-analyst1.BI_Analyst.Customers` AS C
  RIGHT JOIN
  `bi-analyst1.BI_Analyst.Orders` AS O
  ON
  C.CustomerID = O.CustomerID
  LEFT JOIN
  `bi-analyst1.BI_Analyst.Products` AS P
  ON
  O.ProdNumber = P.ProdNumber
  RIGHT JOIN
  `bi-analyst1.BI_Analyst.ProductCategory` AS PC
  ON
  P.Category = PC.CategoryID
)

SELECT * FROM master_table;
```

- I use Common Table Expression (CTE) instead of subquery to improve code readability and querying performance, since CTE syntax is more readable for newbie and have faster performance
- I use RIGHT JOIN and LEFT JOIN command inside CTE syntax to return rows and the matching rows from the left and right table respectively

4. Extract Query Result

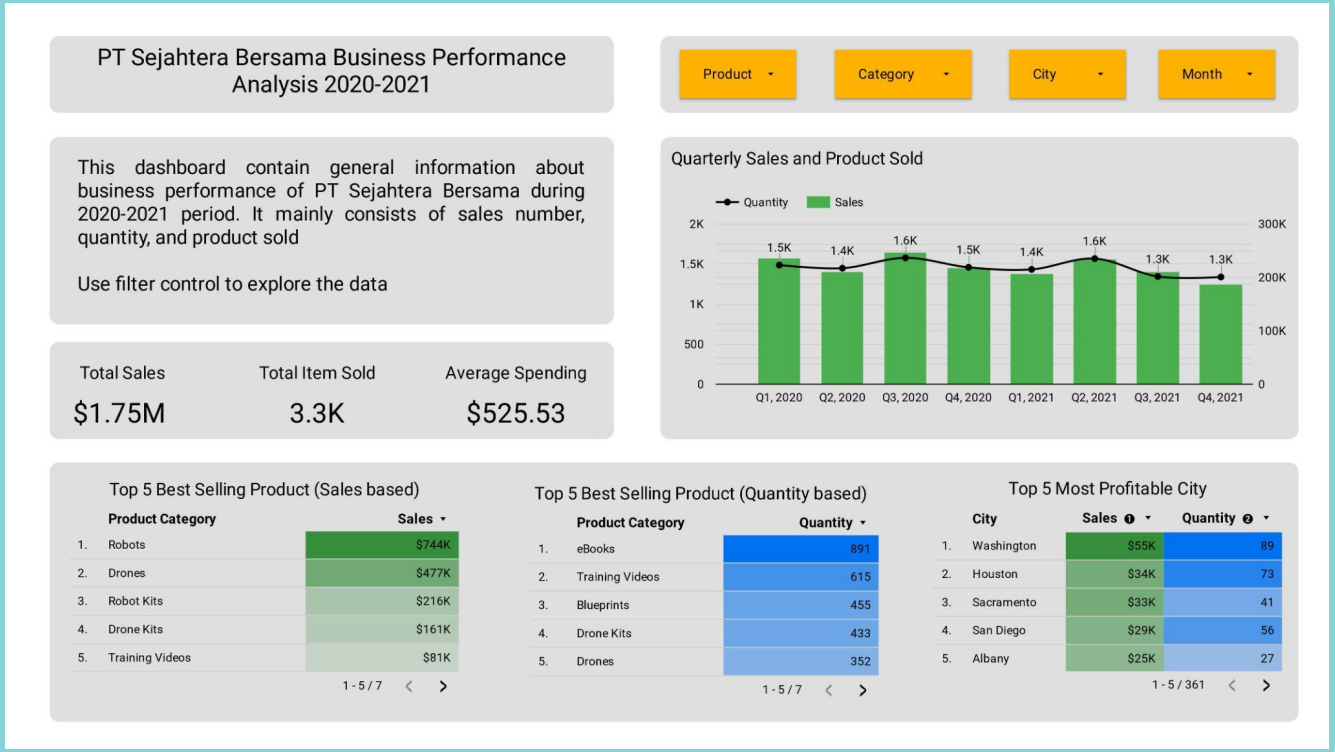


Use “Save results” menu on the bottom, to export the result from CTE command. Then choose “CSV (local file)”

5. Master Table

Row	order_date	category_name	product_name	product_price	order_qty	total_sales	cust_email	cust_city
1	2021-01-15	Blueprints	All Eyes Drone Bluepri...	9.99	1	9.99	fkolodziejs...	Chicago
2	2021-11-26	Blueprints	All Eyes Drone Bluepri...	9.99	2	19.98	aberickkg...	Atlanta
3	2021-11-21	Blueprints	All Eyes Drone Bluepri...	9.99	2	19.98	achesnay...	Battle Creek
4	2021-09-07	Blueprints	All Eyes Drone Bluepri...	9.99	2	19.98	ijohanningr...	Kansas City
5	2021-03-11	Blueprints	All Eyes Drone Bluepri...	9.99	2	19.98	kdjurdjevic...	Mobile
6	2021-01-14	Blueprints	All Eyes Drone Bluepri...	9.99	2	19.98	brapperl4...	Buffalo
7	2021-01-14	Blueprints	All Eyes Drone Bluepri...	9.99	2	19.98	sbrando88...	San Diego
8	2020-10-10	Blueprints	All Eyes Drone Bluepri...	9.99	2	19.98	wdenmead...	New Orleans
9	2020-08-25	Blueprints	All Eyes Drone Bluepri...	9.99	2	19.98	bcumberp...	Birmingham

4. Dashboard



Looker Studio Link

https://lookerstudio.google.com/reporting/5f55611a-5f2d-4751-8070-b64606eb970f

5. Recommendation

- Since Robots and Drones are the **highest revenue**-generating products, consider **introducing** new models or features to maintain interest and competitiveness in the market
- While eBooks and Training Videos lead in **sales volume**, explore **bundling** with Drones or Robots to increase their value.
- Washington, Houston and Sacramento are the **most profitable city**, **analyze** customer feedback from these regions to tailor products and services better to their preferences
- To **increase** the average transaction, implement **upselling** and **cross-selling** by offering premium version of the existing products or providing bundle.

Looker Studio Link :

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_Bank-Muamalat-BI-Analyst_Haris-Dwi-R

Thank You

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