Superstore

Technical Requirements Document (TRD) Template

Project/Initiative

14 February 2023

Version 0.3

Superstore, Pltd. adalah salah satu perusahaan retail yang terletak di US. Perusahaan ini menjual berbagai kebutuhan sehari-hari seperti furniture dan sebagainya. Dengan cabang yang sudah tersebar di berbagai tempat di US. Superstore, Pltd. menunjukkan pertumbuhan yang sangat bagus dari tahun ke tahun.

Superstore TRD

1 Document Revisions

Date	Version Number	Document Changes
20/01/2022	0.1	Initial Draft
11/02/2023	0.2	Second Draft
14/02/2023	0.3	Final Draft

2 Approvals

Role	Name	Title	Signature	Date
User	Subroto Nugraha	Head Department Marketing & Sales		14/02/2023
Business Intelligence	Andi	Andi Wijaya		14/02/2023

3 Introduction

3.1 Project Overview

Proyek ini adalah proyek dashboard Business Intelligence yang berfungsi untuk memberikan visibilitas kepada Department Marketing & Sales atas monitoring penjualan produk, performa cabang, pencapaian target penjualan secara berkala (daily, monthly, quarterly dan yearly). Proyek ini diharapkan untuk **menggantikan proses konsolidasi report manual** yang selama ini dilakukan oleh Departemen Marketing & Sales serta menjadi dashboard yang dapat diakses oleh **seluruh *branch manager*** yang bertugas di Superstore untuk memonitoring dan mengevaluasi kinerja toko mereka.

3.2 Project Objectives

Objective yang tuju dari pembuatan dashboard ini adalah supaya dapat memberi gambaran technical kepada calon users seperti tim Department Marketing & Sales atas penjualan produk di semua regional serta dapat melakukan monitoring penjualan secara daily, monthly, quarterly dan yearly.

3.3 Technical Design Diagram

3.3.1 Components

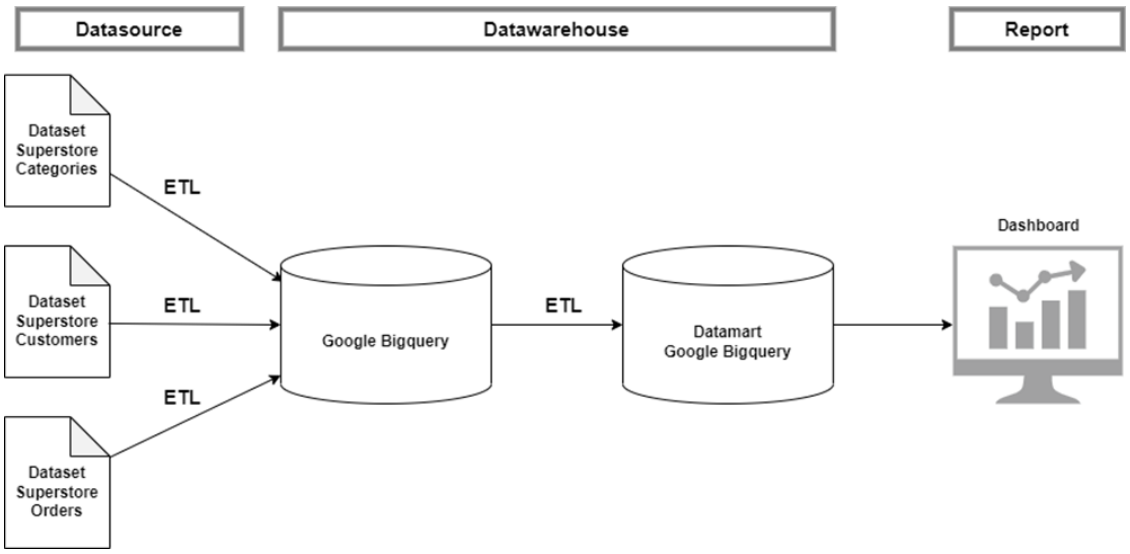
- *Connection & Location Data Source*

  Data Source menggunakan flat file berupa CSV yang bisa didapat melalui link Google Drive Binar Academy berikut ini: Google Drive

- *Server & Storage*

  Serverless (Google Big Query)

- *Logical Data Flow*



3.3.2 Attachment & Link

Dataset yang digunakan pada project ini berupa flat file/csv. Berikut dataset yang digunakan:

- *Dataset_Superstore_Categories*
- *Dataset_Superstore_Customers*
- *Dataset_Superstore_Orders*

3.4 Technical Specification

3.4.1 Application Server

Operating System	Windows 8.1 / Windows Server 2012 R2, atau versi yang lebih terbaru MacOS 10.14 Mojave atau versi yang lebih terbaru
Application Memory	Memory (RAM): Minimal 4 GB, 8 GB lebih direkomendasikan.
Application CPU	*CPU: Processors @ 1.60Ghz 64-Bit*
Expected Application Transaction Volume	Volume transaksi per hari 100Mb, maka prediksi pertumbuhan data dalam satu bulan (30 hari) adalah 3Gb, dan satu tahun adalah 36Gb. Sehingga kebutuhan data storage kira-kira minimal 36Gb.

3.4.2 Server Request

Project ini menggunakan platform Google BigQuery yang merupakan serverless, dengan nama database adalah bie-project-gold-230123 dan permintaan access/permission dapat melalui request ke administrator

3.4.3 Database Request

No	Process Name	Data	Formula
1	Daily reporting	f_daily_reporting	CREATE table bieproject-130223.superstore_dm.f_daily_reporting as (SELECT Order_Date, SUM(Sales) as total_sales, From `bieproject-130223.superstore_ds.orders` Group by 1 Order by 1)
2	monthly reporting	f_monthly_reporting	CREATE table bieproject-130223.superstore_dm.f_monthly_reporting as (SELECT format_datetime('%Y-%m', Order_Date) as month, SUM(Sales) as total_sales, From `bieproject-130223.superstore_ds.orders` GROUP BY 1 Order by 1)
3	quarterly reportiing	f_quarterly_reporting	CREATE table bieproject-130223.superstore_dm.f_quarterly_reporting as (SELECT EXTRACT(YEAR from Order_Date) as Year,

No	Process Name	Data	Formula
			format_datetime('%Q',Order_Date) as Quarter, SUM(Sales) as total_sales, From `bieproject-130223.superstore_ds.orders` GROUP BY 1,2 Order by 1,2)
4	yearly reporting	f_yearly_reporting	CREATE table bieproject-130223.superstore_dm.f_yearly_reporting as (SELECT format_datetime('%Y',Order_Date) as Year, SUM(Sales) as total_sales, From `bieproject-130223.superstore_ds.orders` GROUP BY 1 Order by 1)
5	Actual vs Budget	f_actual_vs_budget	CREATE table bieproject-130223.superstore_dm.f_actual_vs_budget as (SELECT format_date('%Y', Order_Date) as year, format_date('%Q', Order_Date) as quarter, format_date('%m', Order_Date) as month, lead(sum(sales)*1.1) over (order by 1) as target_sales, sum(sales) as actual_sales,

No	Process Name	Data	Formula
			FROM `bieproject-130223.superstore_ds.orders` group by 1,2,3 order by 1,2,3)
6	Current Month vs Last Month	f_current_vs_last_month	Create table bieproject-130223.superstore_dm.f_current_vs_last_month as (SELECT month, total_sales as Total_Sales, Round((Total_Sales - LAG (Total_Sales) OVER (ORDER BY month ASC))/LAG (Total_Sales) OVER (ORDER BY month ASC)*100) AS revenue_percentage_growth FROM `bieproject-130223.superstore_dm.f_monthly_reporting` order by 1)
7	Current Quarter vs Last Quarter	f_current_vs_last_quarter	CREATE table bieproject-130223.superstore_dm.f_current_vs_last_quarter as (SELECT Year, Quarter, total_sales as Total_Sales, ROUND((Total_Sales - LAG (Total_Sales) OVER (ORDER BY Year, Quarter ASC))/LAG

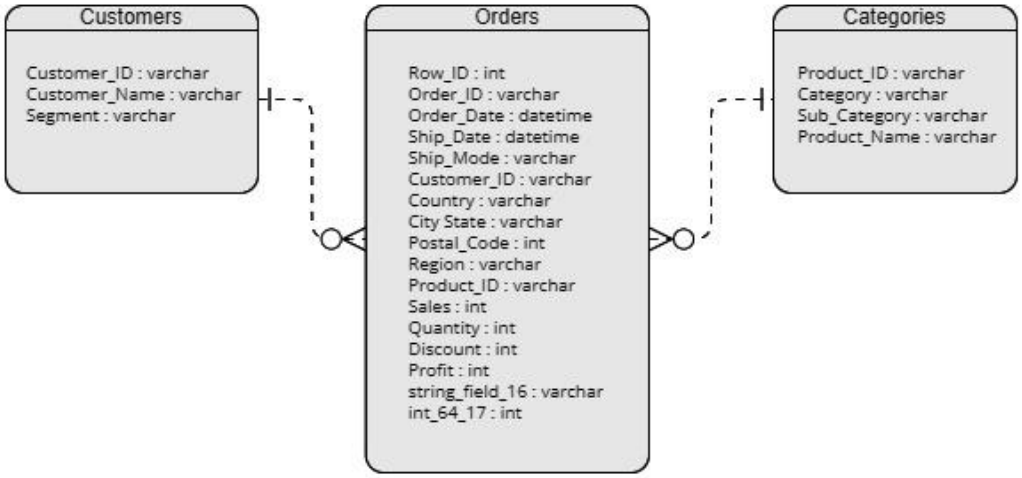
No	Process Name	Data	Formula
			(Total_Sales) OVER (ORDER BY Year, Quarter ASC)*100) AS revenue_percentage_growth FROM `bieproject-130223.superstore_dm.f_quarterly_reporting` ORDER BY Year, Quarter;)
8	Current Year vs Last Year	f_current_vs_last_year	CREATE table bieproject-130223.superstore_dm.f_current_vs_last_year as (SELECT Year, total_sales as Total_Sales, ROUND((Total_Sales - LAG (Total_Sales) OVER (ORDER BY Year, year ASC))/LAG (Total_Sales) OVER (ORDER BY Year ASC)*100) AS revenue_percentage_growth FROM `bieproject-130223.superstore_dm.f_yearly_reporting` ORDER BY Year)
9	Loss Reporting	f_loss_reporting	CREATE table bieproject-130223.superstore_dm.f_loss_reporting as (SELECT Order_Date, City, format_datetime('%m', order_date) AS month,

No	Process Name	Data	Formula
			format_datetime('%Q', order_date) AS quarter, format_datetime('%Y', order_date) as YEAR, a.Product_ID, c.Product_Name, SUM(Profit) AS Profit FROM `bieproject-130223.superstore_ds.orders` a INNER JOIN `bieproject-130223.superstore_ds.categories` c ON a.Product_ID = c.Product_ID WHERE Profit < 0 GROUP BY 1, 2, 3, 4, 5, 6, 7 ORDER BY Order_Date)
10	segmentasi customer	f_segmentasi_customer	CREATE table bieproject-130223.superstore_dm.f_segmentasi_customer as (SELECT O.Order_Date, format_datetime('%Q', Order_Date) AS Quarter, O.Customer_ID, C.Customer_Name, C.Segment, SUM(Sales) as Total_Belanja, CASE WHEN Sales >= 500 THEN 'GOLD' WHEN Sales <= 499 THEN 'SILVER' ELSE 'BRONZE'

No	Process Name	Data	Formula
			END AS Level FROM `bieproject-130223.superstore_ds.customers` C INNER JOIN `bieproject-130223.superstore_ds.orders` O ON O.Customer_ID = C.Customer_ID GROUP BY Order_Date, Quarter, Customer_ID, Customer_Name, Segment, Sales, Level ORDER BY Order_Date, Level;)
11	segmentasi product	f_segmentasi_product	CREATE table bieproject-130223.superstore_dm.f_segmentasi_product as (SELECT O.Order_Date, format_datetime('%m', Order_Date) AS Monthly, O.Product_ID, C.Product_Name, SUM(Quantity) as Total_Barang, CASE WHEN Quantity > 10 THEN '1st Product' WHEN Quantity between 5 and 9 THEN '2nd Product' WHEN Quantity < 5 THEN '3rd Product' END AS Level FROM `bieproject-130223.superstore_ds.categories` C INNER JOIN `bieproject-130223.superstore_ds.orders` O

No	Process Name	Data	Formula
			ON O.Product_ID = C.Product_ID GROUP BY Order_Date, Monthly, Product_ID, Product_Name, Sales, Level ORDER BY Order_Date, Level)
12	segmentasi toko cabang	f_segmentasi_toko_cabang	CREATE table bieproject-130223.superstore_dm.f_segmentasi_toko_cabang as (SELECT O.Order_Date, format_datetime('%m', Order_Date) AS Monthly, Country, City, SUM(Sales) as Total_Omzet, CASE WHEN Sales > 2000 THEN 'Kategori III' WHEN Sales between 1000 and 2000 THEN 'Kategori II' WHEN Sales < 1000 THEN 'Kategori I' END AS Level FROM `bieproject-130223.superstore_ds.orders` O GROUP BY Order_Date, Monthly, Country, City, Sales, Level ORDER BY Order_Date, Level)

Daftar Tabel



ERD

3.4.4 Access Request

No	*Table Name*	*Department*	*Position*	*User Name*
1	*f_daily_reporting* *f_monthly_reporting* *f_quarterly_reporting* *f_yearly_reporting* *f_actual_vs_budget* *f_current_vs_last_month* *f_current_vs_last_quarter* *f_current_vs_last_year* *f_loss_reporting* *f_segmentasi_customer* *f_segmentasi_product* *f_segmentasi_toko_cabang*	*Departement Marketing & Sales pusat*	*Head*	*head_market sales*

2	*f_daily_reporting* *f_monthly_reporting* *f_quarterly_reporting* *f_yearly_reporting* *f_actual_vs_budget* *f_current_vs_last_month* *f_current_vs_last_quarter* *f_current_vs_last_year* *f_loss_reporting* *f_segmentasi_customer* *f_segmentasi_product* *f_segmentasi_toko_cabang*	*Departement Marketing & Sales pusat*	*PIC*	*pic_marketsales*
3	*f_daily_reporting* *f_monthly_reporting* *f_quarterly_reporting* *f_yearly_reporting* *f_actual_vs_budget* *f_current_vs_last_month* *f_current_vs_last_quarter* *f_current_vs_last_year* *f_loss_reporting* *f_segmentasi_customer* *f_segmentasi_product* *f_segmentasi_toko_cabang*	*Semua Manager di masing-masing region*	*Region Manager*	*region_manager*
4	*f_daily_reporting* *f_monthly_reporting* *f_quarterly_reporting* *f_yearly_reporting* *f_actual_vs_budget* *f_current_vs_last_month* *f_current_vs_last_quarter* *f_current_vs_last_year* *f_loss_reporting* *f_segmentasi_customer*	*Semua Branch Manager di masing-masing kota*	*Branch Manager*	*branch_manager*

	f_segmentasi_product *f_segmentasi_toko_cabang*			

3.5 Resources Requirement

3.5.1 Department & Staff

Pre-condition tim yang terlibat dalam proses bisnis ini :

- Semua *Manager* di masing-masing region
- Semua *Branch Manager* di masing-masing kota
- *PIC* dari *Department Marketing & Sales* yang bertugas melakukan konsolidasi dan pembuatan *report* di pusat
- *Head Department Marketing & Sales*

Pra-condition tim yang terlibat dalam proses bisnis ini :

- *Semua Manager* di masing-masing region
- Semua *Branch Manager* di masing-masing kota
- *PIC* dari *Department Marketing & Sales* yang bertugas melakukan konsolidasi dan pembuatan *report* di pusat
- *Head Department Marketing & Sales*
- *BI Analyst*
- *BI Engineer*

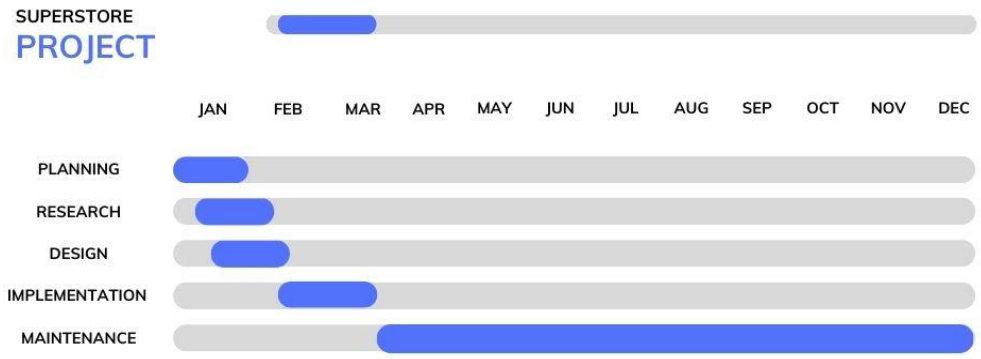
3.5.2 Technical Dependencies

Penarikan data hanya dapat dilakukan pukul 23:00-03:00, dikarenakan pada waktu yang tidak disebutkan server digunakan untuk kebutuhan lainnya.

3.5.3 Non-Technical Dependencies

Tidak semua *department* melakukan pencatatan secara *daily*, beberapa *department* hanya melakukan pencatatan secara *weekly* dan *monthly*.

3.6 Timeline & Deadlines



3.7 Assumptions

Expected Volume Data pada project ini belum merupakan estimasi final, bergantung pada kemajuan bisnis di kemudian hari maka sangat memungkinkan transaksi data harian lebih besar dibandingkan yang sudah tertulis pada TRD.

3.8 Project Cost

- Google BigQuery *"pay-as-you-go"* = $5/Terabyte
- Tableau Desktop Professional = Rp.41.100.000/Tahun (per-*user*)
- Operational Laptop (HP Probook 440 G8) = Rp.17.400.000/user

4 Appendices

4.1 Related Documents

Screenshot hasil query database request:

- *f_daily_reporting*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_daily_reporting` LIMIT 100
```

Press Alt+F1 for Accessibility

Query results SAVE RESULTS EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	Order_Date	total_sales
1	2014-01-03	16.448
2	2014-01-04	288.06
3	2014-01-05	19.536
4	2014-01-06	4407.09999...
5	2014-01-07	87.1579999...

- *f_monthly_reporting*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_monthly_reporting` LIMIT 100
```

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Query results

SAVE RESULTS | EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	month	total_sales
1	2014-01	14236.8949...
2	2014-02	4519.892
3	2014-03	55691.0090...
4	2014-04	28295.3449...
5	2014-05	23648.2869...

- *f_quarterly_reporting*

```
SELECT * FROM `bieproject-130223.superstore_dm.f_quarterly_reporting` LIMIT 100
```

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ery results

SAVE RESULTS | EXPLORE DATA

INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Year	Quarter	total_sales
2014	1	74447.796
2014	2	86538.7596
2014	3	143633.212...
2014	4	179627.730...

- *f_yearly_reporting*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_yearly_reporting` LIMIT 100
```

Press Alt+F1 for Accessibility Options

Query results

SAVE RESULTS | EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	Year	total_sales
1	2014	484247.498...
2	2015	470532.509...
3	2016	609205.598...
4	2017	733215.255...

- *f_actual_vs_budget*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_actual_vs_budget` LIMIT 100
```

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Query results — SAVE RESULTS — EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH | PREVIEW

Row	year	quarter	month	target_sales	actual_sales
1	2014	1	01	37614.7293...	14236.8949...
2	2014	1	02	42598.8771...	4519.892
3	2014	1	03	130292.607...	55691.0090...
4	2014	2	04	43188.1592...	28295.3449...
5	2014	2	05	48687.22122	23648.2869...

- *f_current_vs_last_month*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_current_vs_last_month` LIMIT 100
```

Press Alt+F1 for Accessibility Optio

Query results — SAVE RESULTS — EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH | PREVIEW

Row	month	Total_Sales	revenue_percent
1	2014-01	14236.8949...	*null*
2	2014-02	4519.892	-68.0
3	2014-03	55691.0090...	1132.0
4	2014-04	28295.3449...	-49.0
5	2014-05	23648.2869...	-16.0

- *f_current_vs_last_quarter*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_current_vs_last_quarter` LIMIT 100
```

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Query results — SAVE RESULTS — EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH | PREVIEW

Row	Year	Quarter	Total_Sales	revenue_percent
1	2014	1	74447.796	*null*
2	2014	2	86538.7596	16.0
3	2014	3	143633.212...	66.0
4	2014	4	179627.730...	25.0
5	2015	1	68851.7385...	-62.0

- *f_current_vs_last_year*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_current_vs_last_year` LIMIT 100
```

Press Alt+F1 for Accessibility

Query results — SAVE RESULTS — EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	Year	Total_Sales	revenue_percent
1	2014	484247.498...	*null*
2	2015	470532.509...	-3.0
3	2016	609205.598...	29.0
4	2017	733215.255...	20.0

- *f_loss_reporting*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_loss_reporting` LIMIT 100
```

Press Alt+F1 for Accessibility Options

Query results — SAVE RESULTS — EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	Order_Date	City	month	quarter	YEAR
1	2014-01-04	Naperville	01	1	2014
2	2014-01-04	Naperville	01	1	2014
3	2014-01-07	Huntsville	01	1	2014
4	2014-01-07	Huntsville	01	1	2014

month

- *f_segmentasi_customer*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_segmentasi_customer` LIMIT 100
```

Press Alt+F1 for Accessibility Optior

Query results — SAVE RESULTS — EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	Order_Date	Quarter	Customer_ID	Customer_Name	Segment
1	2014-01-03	1	DP-13000	Darren Powers	Consumer
2	2014-01-04	1	PO-19195	Phillina Ober	Home Office
3	2014-01-04	1	PO-19195	Phillina Ober	Home Office
4	2014-01-04	1	PO-19195	Phillina Ober	Home Office

- *f_segmentasi_product*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_segmentasi_product` LIMIT 100
```

Press Alt+F1 for Accessibility Option

Query results

SAVE RESULTS | EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	Order_Date	Monthly	Product_ID	Product_Name	Total_Barang	Level
1	2014-01-03	01	OFF-PA-10000174	Message Book, Wirebound, Four 5 1/2" X 4" Forms/Pg., 200 Dupl. Sets/Book	2	3rd P

- *f_segmentasi_toko_cabang*

```
1  SELECT * FROM `bieproject-130223.superstore_dm.f_segmentasi_toko_cabang` LIMIT 100
```

Press Alt+F1 for Accessibility Optio

Query results

SAVE RESULTS | EXPLORE DATA

JOB INFORMATION | RESULTS | JSON | EXECUTION DETAILS | EXECUTION GRAPH PREVIEW

Row	Order_Date	Monthly	Country	City	Total_Omzet	Level
1	2014-01-03	01	United States	Houston	16.448	Kateg
2	2014-01-04	01	United States	Naperville	11.784	Kateg
3	2014-01-04	01	United States	Naperville	272.736	Kateg
4	2014-01-04	01	United States	Naperville	3.54	Kateg