

# BANK MUAMALAT

# BUSINESS

# INTELLIGENCE

# ANALYST

Project Based Internship

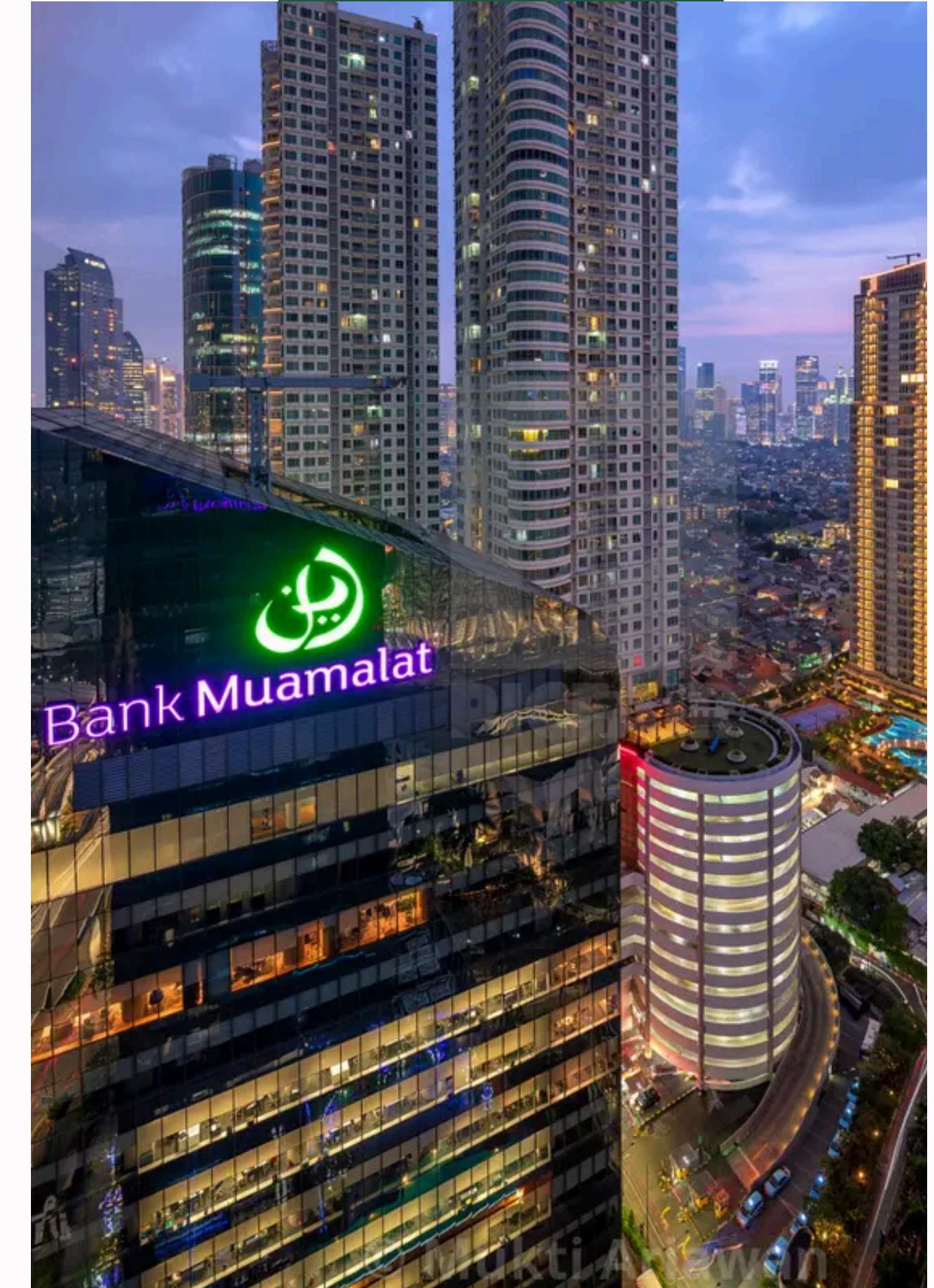
Batch April 2024



Google  
Big Query



Presented by Fajar Wahyu Pratama



# Introduction

## Fajar Wahyu Pratama

Hello!!

I am a third-year undergraduate student majoring in mathematics at Institut Teknologi Sepuluh Nopember Surabaya who has a great interest in data. Someone who is committed, analytical, responsible, and able to adapt to changing circumstances with new knowledge and perspectives.

## Experience

### Sponsorship Staff

Olimpiade Matematika ITS 16TH  
(OMITS 16TH)  
(Mar 2023 - Nov 2023 )

### Manager Sponsorship

TDC Summit Fest 2022  
(Jul 2022 - Oct 2022)



### Web Developer

Subdirektorat Koordinasi  
Perkuliahannya Bersama / SKPB ITS  
(Dec 2024 - Feb 2024)

### Legal Advisor

Tecnopreneurship Development  
Center (TDC ITS)  
(Feb 2023 - Jan 2024)

### Arabic and Nahwu Teacher

Madrasah Diniyah Alhidayah  
Lebaksono  
(Jun 2020 - Feb 2022)



**This project is the result of my final project**, as a Business Intelligence Analyst Intern who has understood the business data at Bank Muamalat, I am tasked with creating a dashboard from the raw data that has been provided.

A wide-angle photograph of a modern office common area. The space is filled with various types of green plants, including hanging vines and large potted plants on wooden tables. There are several wooden desks with black office chairs. In the background, there are large windows and doors, and the ceiling is high with exposed industrial-style pipes and lighting fixtures.

# CASE STUDY

# Overview

As a data analyst, we are given 4 datasets that can be used and processed for provide conclusions and suggestions for internal companies increase sales.

01



Determine each primary key in the 4 datasets sales

02



Determine the relationships among the four tables.

03



As a BI Analyst, we will create a master table containing important information and sorted by order date.

04



Using Looker Studio, a visualization that displays the sales data will be created.

05



As a BI analyst, what can you propose to maintain sales or increase sales with the existing detailed transaction table already exist?

Data Source :  
<https://drive.google.com/file/d/1RwsBQ1FrINfz6qiq0V5nD7gF7jO81To3/view?usp=sharing>

# Primary Key

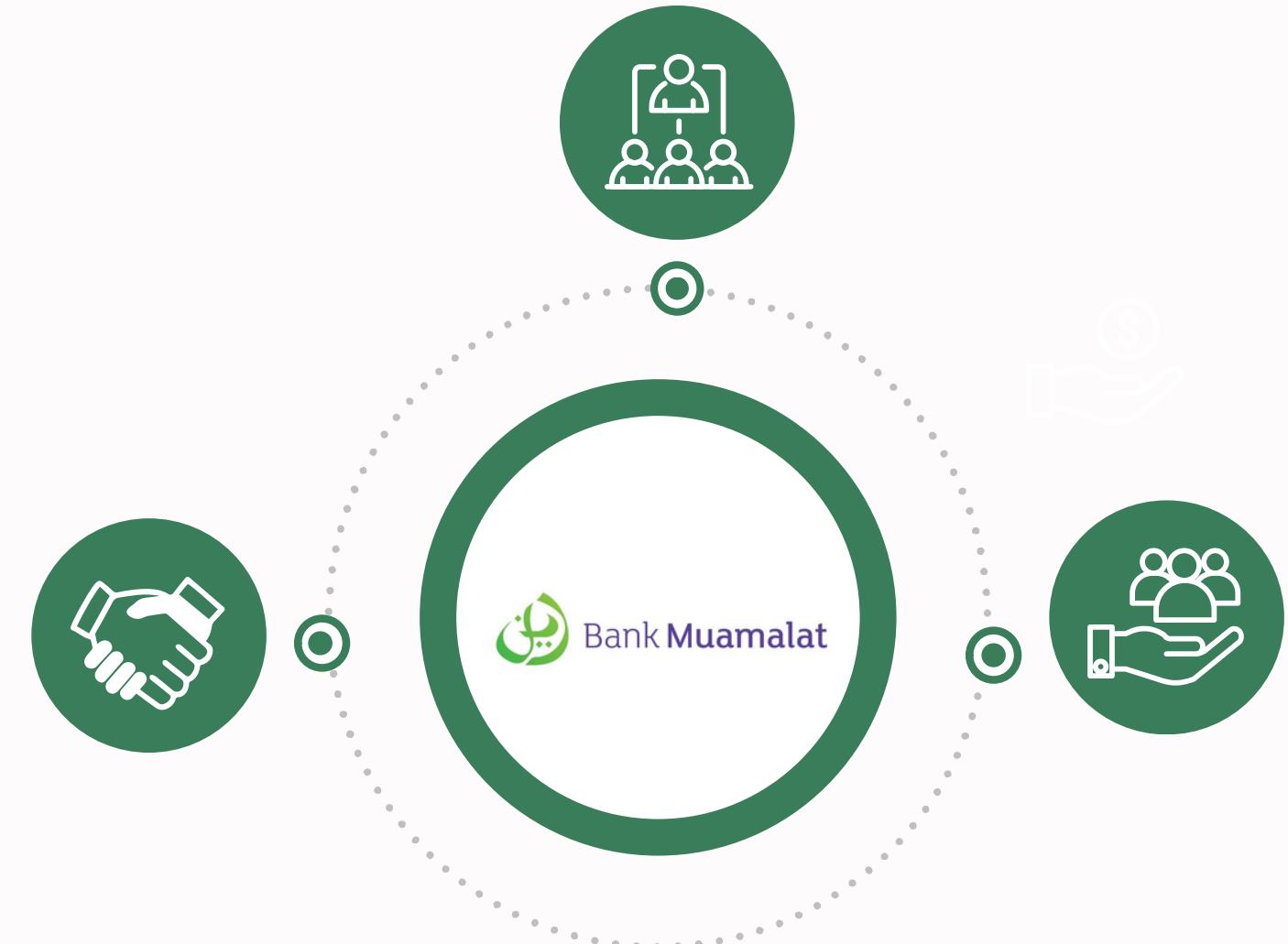
A **primary key** is a column in a database table that has a unique value for each row and is not allowed to have a null value. **Primary keys** are used to uniquely identify each row in a table, ensure data integrity and facilitate database operations such as searching and merging data.

Primary key of Customer Table: **CustomerID**

Primary key Products Table: **ProdNumber**

Primary key Orders Table: **OrderID**

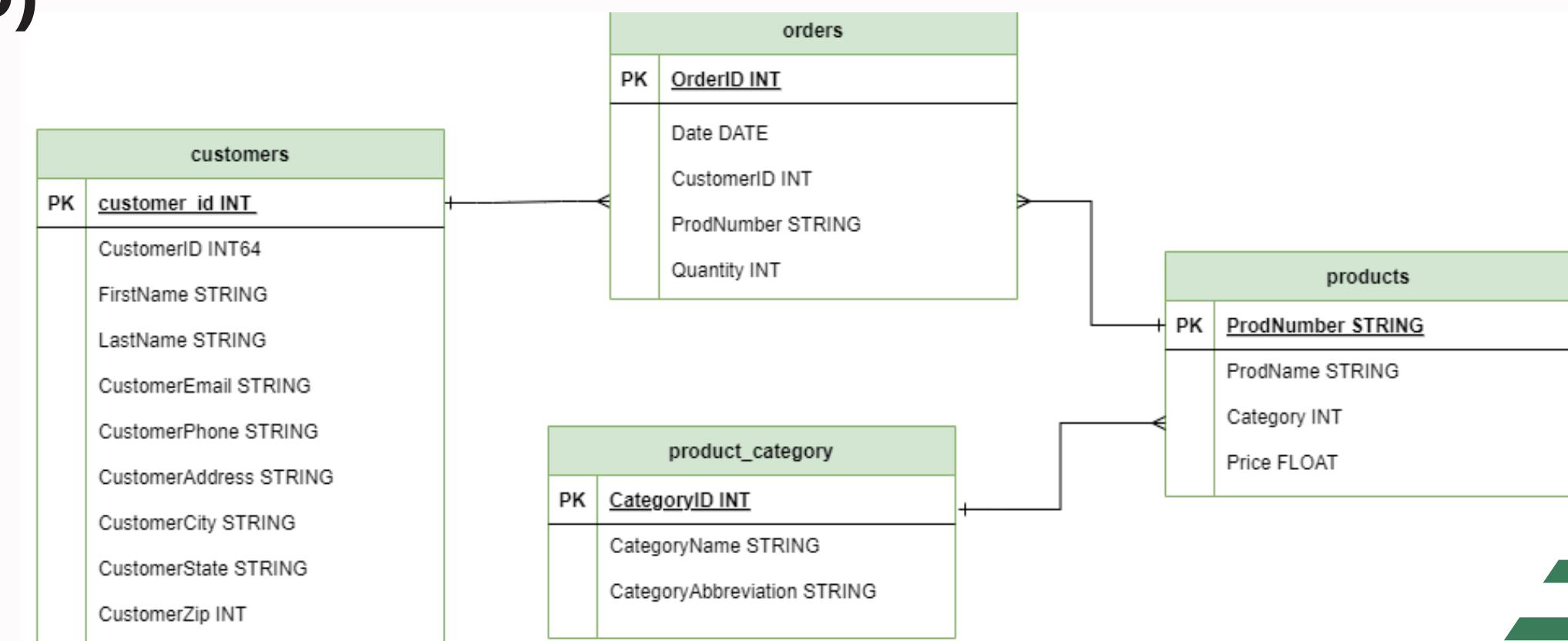
Primary key ProductCategory Table: **CategoryID**



## Entity Relationship Diagram (ERD)

There are 3 common types of table relationships that we often encounter when designing a database:

- **One to One** : a relationship where a row in table A is only related to one row in table B.
- **One to Many**: a relationship where a row in table A has a relationship to multiple rows in table B.
- **Many to Many**: a relationship where more than one row of data from table A is related to more than one row of data in table B.



# Google BigQuery

1	FirstName	LastName	CustomerEmail	CustomerPhone	CustomerAddress	CustomerCity	CustomerState	CustomerZip
2	Grazia	Rasmus	grasmusas@i2i.jp#mailto:g	(202) 577-2595	628 Buhler Junction	Washington	District of Columbia	20029
3	Bunny	Trevan	btrevanmj@wordpress.org	917-903-2827	52 Cascade Drive	Jamaica	New York	11436
4	Tracie	Grayston	tgrayston7k@pagesperso-c	404-868-2391	672 Comanche Way	Atlanta	Georgia	30343
5	Amerigo	Garrels	agarrelts6e@oaic.gov.au#n	415-190-3290	8252 Village Green Hill	San Francisco	California	94177
6	Shea	Stronghill	sstronghill1@google.nl#m	432-775-7828	542 3rd Point	Midland	Texas	79705
7	Geoffry	Bonde	gbonde90@vimeo.com#ma	415-176-9919	781 Larry Place	San Francisco	California	94159
8	Noelle	Carlile	ncarlile37@mit.edu#mailto:c	405-745-9826	539 Crowley Parkway	Oklahoma City	Oklahoma	73114
9	Binny	Whetson	bwhetson@amazon.de#r	585-968-0566	579 Sugar Circle	Rochester	New York	14619
10	Curran	MacMichael	cmacmichael5y@businessv	520-968-8763	4949 Hauk Road	Tucson	Arizona	85705
11	Andy	Woodruff	awoodruff@techcrunch.c	315-377-2198	8278 Scott Terrace	Rochester	New York	14614
12	Darla	Hassen	dhassencj@hp.com#mailto:	585-418-2593	6900 Birchwood Center	Rochester	New York	14604
13	Gerard	Witherdon	gwitherdon8m@ow.ly#mai	405-794-2184	27 Golf View Parkway	Norman	Oklahoma	73071
14	Faber	Boosey	fbooseyj@chicagotribune.	804-270-9294	925 5th Hill	Richmond	Virginia	23237
15	Jorgan	Gregh	jgreghik@quantcast.com#n	727-518-4607	65 Commercial Terrace	Tampa	Florida	33605
16	Davidson	Cramphorn	dcrampornf7@disqus.com	754-372-3171	1 OrderID Date CustomerID ProdNumber Quantity	2 Category1 CategoryName CategoryAbbreviation		
17	Annelise	Genders	agenders72@virginia.edu#l	240-191-9933	1 01/01/2020 1866 EB514	2 Blueprints BP		
18	Ailsun	Gever	ageverpd@ft.com#mailto:a	907-578-1241	2 01/01/2020 1567 RS706	2 Drone Kits DK		
19	Mead	Whiteley	mwhiteleypw@istockphot	609-361-4611	3 01/01/2020 2064 TV804	3 Drones DS		
20	Major	Aynold	maynoldrp@typepad.com#	608-327-8161	4 01/01/2020 287 DK203	4 eBooks EB		
21	Waylan	Waison	wwaison4@people.com.c	319-169-0571	5 01/01/2020 422 EB517	5 Robot Kits RK		
22	Oswell	Lissaman	olissaman1q@apple.com#r	214-754-6081	6 01/01/2020 954 EB519	6 Robots RS		
23	Lucine	Stuhkne	letsuhkne@lucine.com#n	432-722-2751	7 01/01/2020 726 RK604	7 Training Videos TV		
1	ProdNumber	ProdName	Category	Price	'01/2020	422 EB517		
2	BP101	All Eyes Drone Blueprint		1 9.99	'01/2020	954 EB519		
3	BP102	Bsquare Robot Blueprint		1 8.99	'01/2020	726 RK604		
4	BP104	Cat Robot Blueprint		1 4.99	'01/2020	1740 TV810		
5	BP105	Creature Robot Arms Blueprint		1 12.00	'01/2020	1652 TV804		
6	BP106	Hexacopter Drone Blueprint		1 8.99	'01/2020	1431 DS304		
7	BP107	Ladybug Robot Blueprint		1 12.00	'01/2020	270 RK604		
8	BP108	Panda Robot Blueprint		1 7.99	'01/2020	815 DK201		
9	BP109	QuadroCopter Blueprint		1 10.99	'01/2020	157 EB508		
10	BP110	Sleepy Eye Blueprint		1 11.99	'01/2020	179 BP107		
11	BP111	Upside Down Robot Blueprint		1 12.00	'01/2020	832 RK605		
12	DK201	BYOD-100		2 54.00	'01/2020	1465 DK205		
13	DK202	BYOD-200		2 58.95	'01/2020	678 RS702		
14	DK203	BYOD-220		2 69.00	'01/2020	1644 DS301		
15	DK204	BYOD-300		2 89.00	'01/2020	997 DK209		
16	DK205	BYOD-350		2 89.95	'01/2020			
17	DK206	BYOD-400		2 119.00	'01/2020			
18	DK207	BYOD-400S		2 129.95	'01/2020			
19	DK208	BYOD-500		2 167.00	'01/2020			
20	DK209	BYOD-550		2 179.00				
21	DS301	DA-SA702 Drone		3 399.00				

Products1



Google  
Big Query

The master table is created by combining all tables to get the features that will be included in the dashboard. We will create a master table that contains information:

- CustomerEmail (**cust\_email**)
- CustomerCity (**cust\_city**)
- OrderDate (**order\_date**)
- OrderQty (**order\_qty**)
- ProductName (**product\_name**)
- ProductPrice (**product\_price**)
- ProductCategoryName (**category\_name**)
- TotalSales (**total\_sales**)

Sort the data based on the earliest to latest transaction date the earliest to the latest.

# Google BigQuery



## Source Code :

### SELECT

```
Orders.Date AS order_date,  
ProductCategory.CategoryName as category_name,  
Products1.ProdName AS product_name,  
Products1.Price AS product_price,  
Orders.Quantity AS order_qty,  
ROUND((Products1.Price * Orders.Quantity),2) as total_sales,  
Customers.CustomerEmail AS cust_email,  
Customers.CustomerCity AS cust_city
```

### FROM

```
pbi-project-muamalat.PBI_project_muamalat.Customers
```

```
JOIN pbi-project-muamalat.PBI_project_muamalat.Orders Orders ON Customers.CustomerID = Orders.CustomerID
```

```
JOIN pbi-project-muamalat.PBI_project_muamalat.Products1 Products1 ON Products1.ProdNumber = Orders.ProdNumber
```

```
JOIN pbi-project-muamalat.PBI_project_muamalat.ProductCategory ProductCategory ON ProductCategory.CategoryID = Products1.Category
```

```
ORDER BY 1,5 ASC
```

## Output :

Row	order_date	category_name	product_name	product_price	order_qty	total_sales	cust_email	cust_city
1	2020-01-01	Drone Kits	BYOD-220	69.0	1	69.0	edew@nba.com#mailto:edew@nba...	Honolulu
2	2020-01-01	eBooks	Polar Robots	23.99	2	47.98	fvaslerqt@comsenz.com#mailto:fv...	Jackson
3	2020-01-01	Robots	RWW-75 Robot	883.0	3	2649.0	tmckernot@tinyurl.com#mailto:tmc...	Katy
4	2020-01-01	eBooks	SCARA Robots	19.5	5	97.5	llespercx@com.com#mailto:llesper...	Des Moines
5	2020-01-01	eBooks	Spherical Robots	16.75	5	83.75	lfromonte9@de.vu#mailto:lfromont...	Birmingham
6	2020-01-01	Training Videos	Drone Video Techniques	37.99	6	227.94	gstiggersdd@eventbrite.com#mail...	Saint Petersburg
7	2020-01-02	Training Videos	Understanding Automati...	44.95	1	44.95	ksteersh@ameblo.jp#mailto:ksteer...	San Diego
8	2020-01-02	Blueprints	Ladybug Robot Blueprint	12.0	2	24.0	akingaby78@deviantart.com#mail...	West Palm Beach
9	2020-01-02	Drones	DTE-QFN20 Drone	250.0	2	500.0	jcolthurstgu@cbsnews.com#mailto:...	Sacramento
10	2020-01-02	Robot Kits	BYOR-2640S	189.0	2	378.0	aguiongo@behance.net#mailto:agu...	Houston
11	2020-01-02	Robot Kits	BYOR-2640S	189.0	2	378.0	gmirrlees4v@state.tx.us#mailto:g...	Washington

Load more

Results per page: 50 ▾ 1 – 50 of 3339 |< < > >|

# Looker Studio

Looker Studio (formerly Google Data Studio) is one of the built-in visualization tools Google that makes it easy for us to do data visualization.

From the results of the table created in the previous master table, save the results in CSV form. Using Looker Studio, create a visualization that displays the sales data. The visualization must contain at least :

- Total sales
- Grand total sales by product category
- Total qty by product category
- Total sales by city
- Total qty by city
- Top 5 product categories with the highest sales
- Top 5 product categories with the highest qty

# SALES PERFORMANCE DASHBOARD

## 2020-2021

Pilih rentang tanggal

Product Name

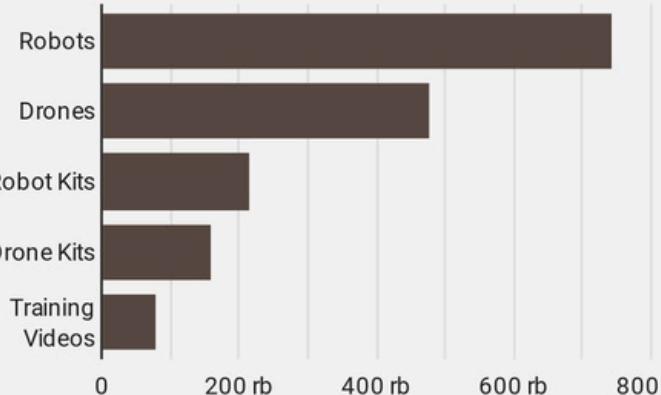
Total Sales

**1.754.750,57**

Order Total

**11.654**

Top 5 product categories with the highest sales



Affordable Customers

**1.671**

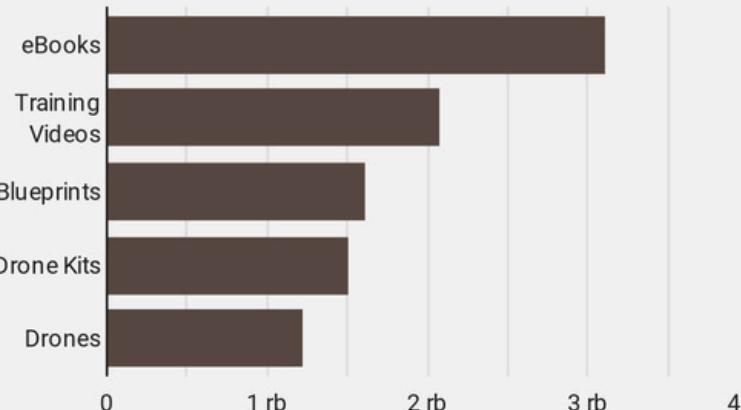
Total Product

**69**

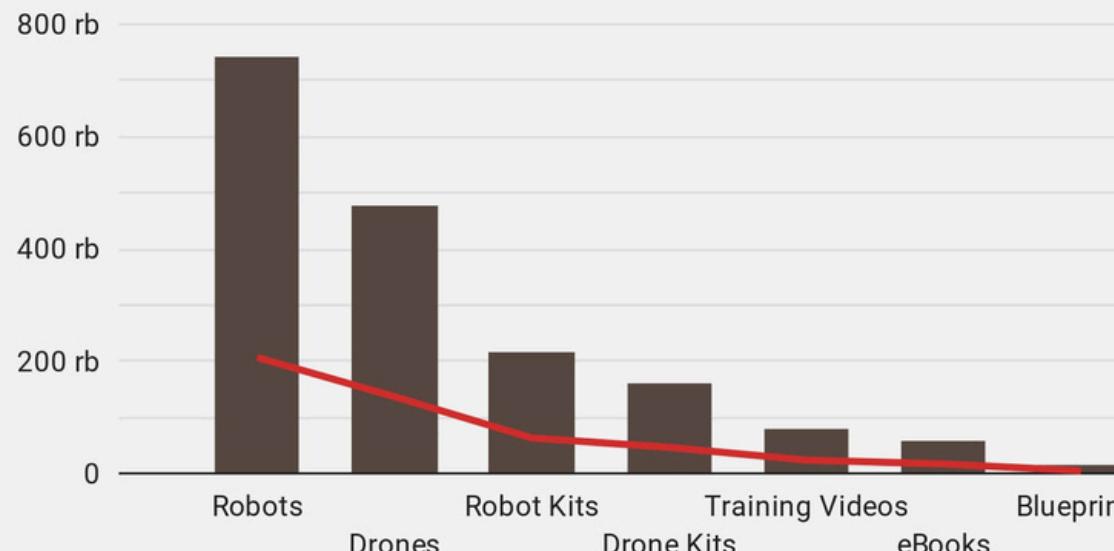
Cities Reachable

**361**

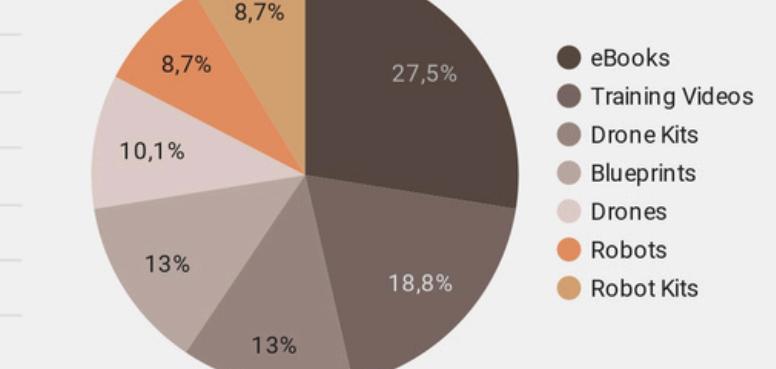
Top 5 product categories with the highest quantity



The relationship between product price and sales



Sales by Product Category



Total Quantity and Sales based on City

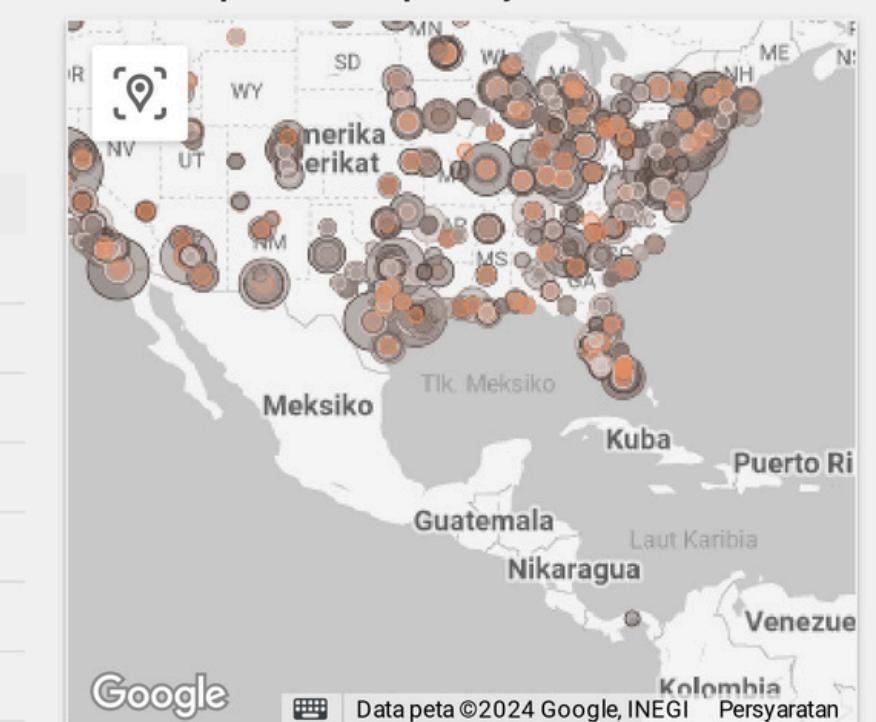
	Customer city	Order Quantity	Total Sales
1.	Washington	308	55.381,94
2.	Houston	249	33.761,49
3.	Sacramento	153	33.380,2
4.	San Diego	203	29.228,59
5.	Albany	109	25.405,88

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Total Quantity and Sales based on product category

Product Catego...	Order Quantity	Total Sales
1. Robots	1.053	743.505
2. Drones	1.227	477.447
3. Robot Kits	1.037	216.437
4. Drone Kits	1.515	161.242,5
5. Training Videos	2.081	80.716,15
6. eBooks	3.123	58.968,41
7. Blueprints	1.618	16.434,51



Google



Data peta ©2024 Google, INEGI Persyaratan



## Conclusion

### Relationship between Price and Products Sold:

There is a negative relationship between product price and items sold. This suggests that distribution and price optimization can increase sales. However, price optimization must be accompanied by product innovation to maintain demand.

### Sales Dominance and Items Sold:

The city of Washington dominated total quantity and total sales. The Robot product category dominates sales, while the eBooks category dominates items sold. **This suggests** a discrepancy between consumer preferences and marketing strategies that needs to be further analyzed.

### Product Category Performance:

Sales of eBooks and Training Videos are less effective as they have high sales quantity but low sales revenue. In contrast, the Robots and Drones category has the highest sales and contributes up to 50% of the total sales. Therefore, **it is recommended** to allocate more marketing budget and resources to the Robots and Drones category.

### Regional Sales Gap:

There is a significant sales gap between urban and suburban areas. In urban areas, not all cities have high sales rates. For example, Indianapolis has a low sales rate. **This suggests** the need for specific strategies to increase sales in high-potential urban areas like Indianapolis.

# Recomendation

## 01. Expand Marketing Reach

Develop new marketing strategies to stimulate sales growth in regions other than Washington City.

## 02. Emphasis on Top Product Categories

Focus on promoting Robots product categories that have high sales potential, but also pay attention to other categories that have potential.

## 03. Optimize Pricing and Inventory:

Make price adjustments based on the positive relationship between price and sales to increase sales volume. Also, optimize the inventory of the eBooks product category which has high demand.

## 04. Periodic Evaluation:

Conduct periodic evaluations to keep up with market trends and changes. Adjust marketing strategies effectively based on the evaluation results.





# THANK YOU



# Fajar Wahyu Pratama

# Dashboard Performance here

# Github File



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# Surabaya, East Java