

# Indonesia Stock Exchange Analysis

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Ramadhan



# IDX

Indonesia Stock Exchange

member of

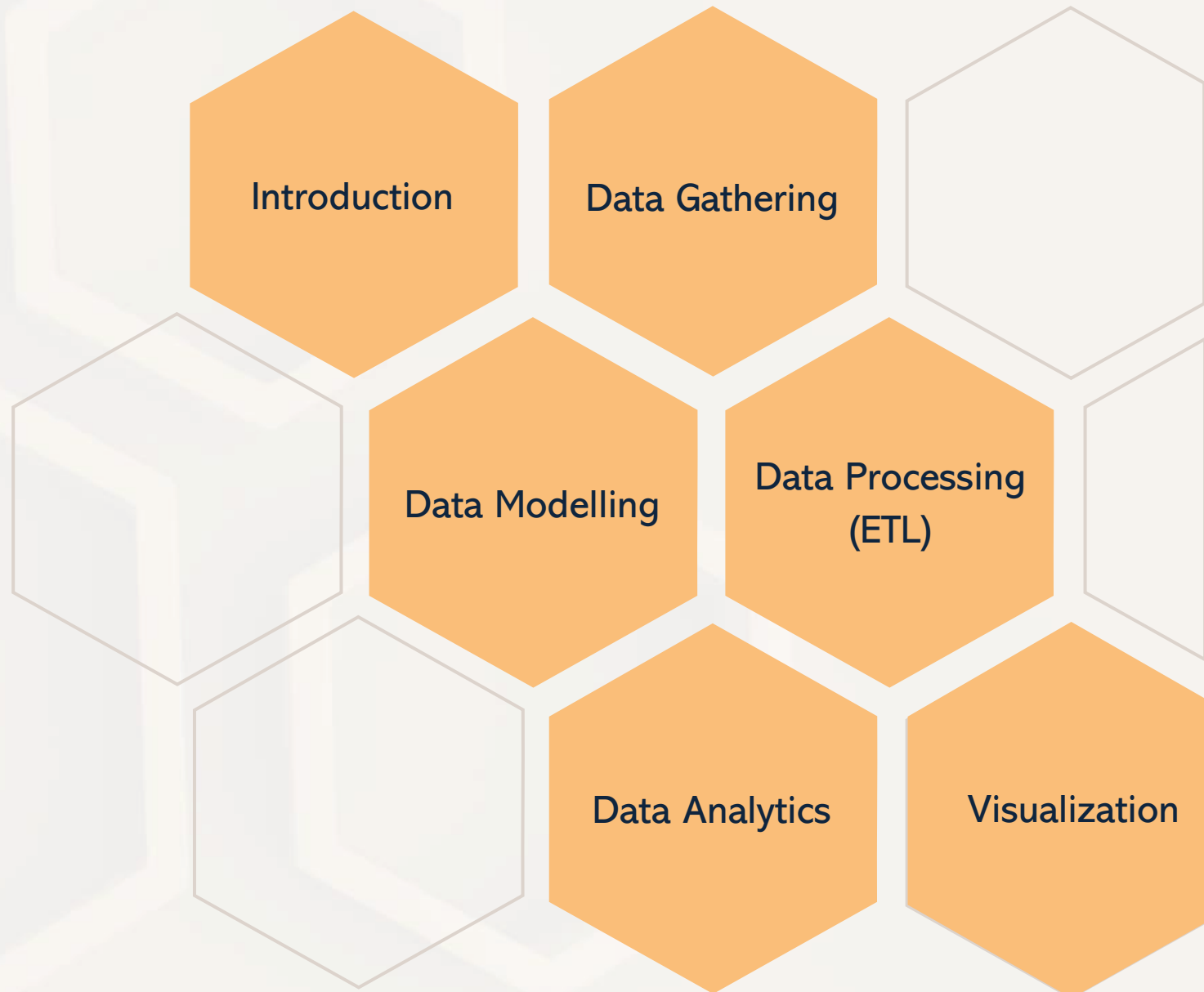
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Google Cloud

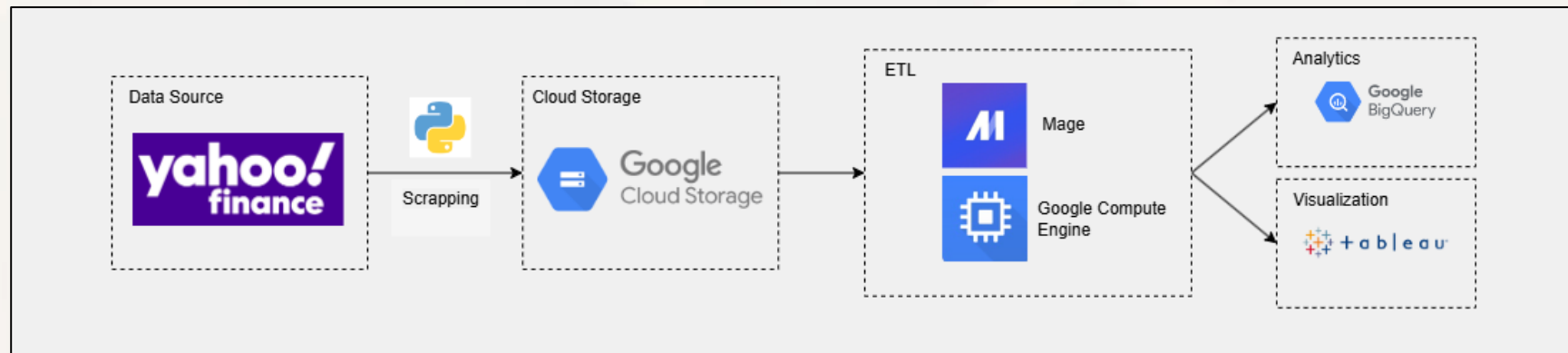


# Presentation Flow



# Introduction

In this project, I analyzed companies listed in the LQ45 index. First, I **gathered** financial reports and stock price data using the Yahoo Finance API. Then, I performed **ETL** processes with Mage AI on a Google virtual machine to prepare the data. Using BigQuery SQL, I answered questions and identified trends within the dataset. Finally, I created a Tableau dashboard to **visualize** the data, enabling a clear examination of the financial health and performance trends of the LQ45 companies.



# How I Get the Data



## Gathering Financial Statement (Auto)

- Retrieve financial data for LQ45 companies using Yahoo Finance API



## Basic Data Transformation

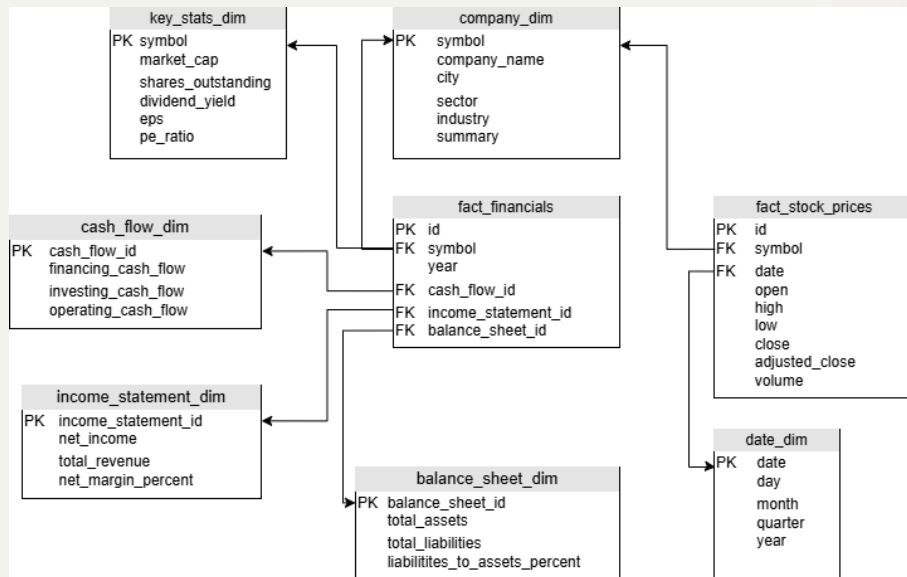
- Processes fetched data into structured format using predefined functions



## Manually Gather Stock History Price

- Search and download stock price csv manually.
- Will find a way to automate this step in the future.

# Data Modelling



- **Company Dimension (company\_dim):**
  - Stores company details like symbol, name, sector, and industry.
- **Key Stats Dimension (key\_stats\_dim):**
  - Contains key financial metrics such as market cap and EPS.
- **Financial Dimensions:**
  - Cash Flow (cash\_flow\_dim): Tracks cash flow activities.
  - Income Statement (income\_statement\_dim): Records net income and revenue.
  - Balance Sheet (balance\_sheet\_dim): Details assets and liabilities.
- **Fact Tables:**
  - Fact Financials (fact\_financials): Central table linking company financial metrics.
  - Fact Stock Prices (fact\_stock\_prices): Stores daily stock prices and volumes.
- **Date Dimension (date\_dim):**
  - Provides detailed date information for time-based analysis.

## Key Points

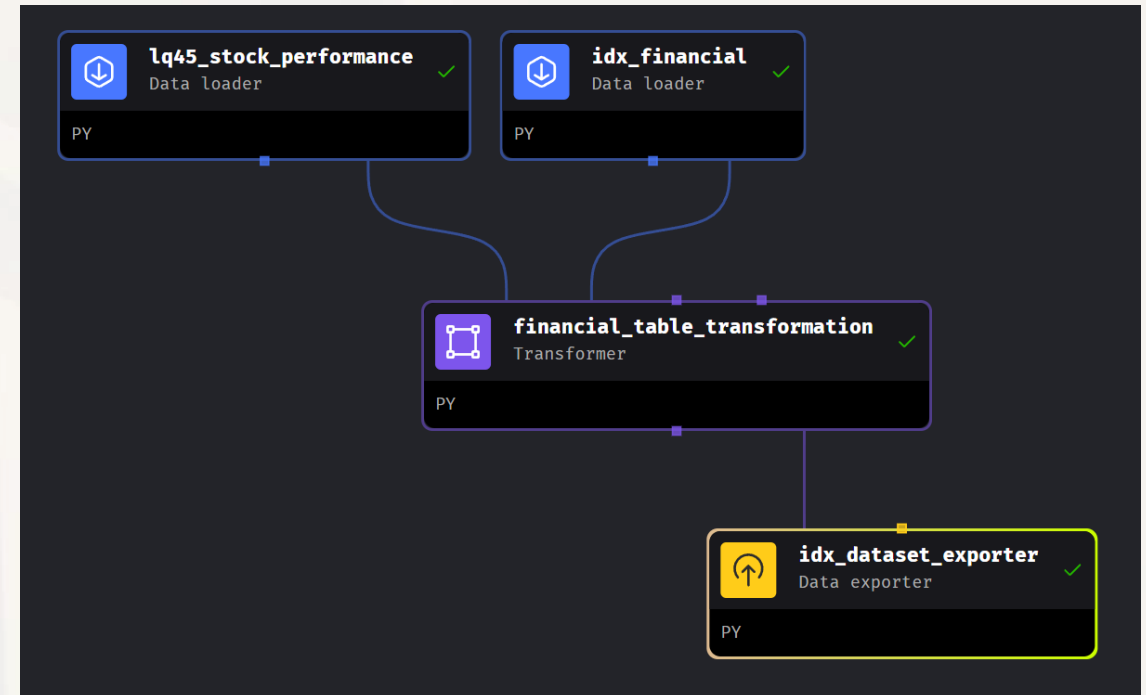
**Normalized Schema:** Ensures minimal data redundancy and consistency.

**Star Schema Design:** Optimized for efficient querying and analysis.

**Comprehensive Analysis:** Integrates financial statements with stock price data for holistic insights.

# Data Processing (ETL)

ETL process are conducted using Mage AI on a Google VM, data from the LQ45 stock performance and IDX financial reports are first loaded using the respective data loader modules. The `lq45_stock_performance` module gathers stock performance (price) data, while the `idx_financial` module retrieves financial data for the companies. These datasets are then processed by the `financial_table_transformation` module, which integrates, cleans, and structures the data for analysis. Finally, the transformed data is exported to Google BigQuery using the `idx_dataset_exporter` module. This streamlined ETL workflow ensures the data is accurate, consistent, and ready for use in various data applications.



Code Repository: [mini-projects/IDX Financial Analysis at main · fauzanrrizky/mini-projects \(github.com\)](https://github.com/fauzanrrizky/mini-projects)

# Data Analytics Questions (SQL)

1. Which companies have the highest total assets in the balance sheet?
2. List the top 5 companies that had the highest net income margin percentage in the latest available year
3. List the companies with bad debt ratio (liabilities to asset >60%) on 2023
4. List the average PE ratio and dividend yield for companies in each sector.
5. List companies with the highest net income growth rate in the last two years.



SQL Queries: [mini-projects/IDX Financial Analysis/BigQuery SQL/idx\\_sql\\_analysis.sql at main · fauzanrrizky/mini-projects \(github.com\)](#)

# Which companies have the highest total assets in the balance sheet?

Query results				
JOB INFORMATION		RESULTS	CHART	JSON
EXECUTION DETAILS		EXECUTION GRAPH		
Row	symbol ▼	company_name ▼	total_assets ▼	
1	BMRI	PT Bank Mandiri (Persero) Tbk	2.174219449e+15	
2	BBRI	PT Bank Rakyat Indonesia (Per...	1.96500703e+15	
3	BBCA	PT Bank Central Asia Tbk	1.40810701e+15	
4	BBNI	PT Bank Negara Indonesia (Per...	1.086663986e+15	
5	ASII	PT Astra International Tbk	4456790000000...	
6	BBTN	PT Bank Tabungan Negara (Per...	4387497360000...	
7	BRIS	PT Bank Syariah Indonesia Tbk	3536241240000...	
8	TLKM	Perusahaan Perseroan (Persero) PT Telekomunikasi Indonesia Tbk	2865920000000...	
9	INDF	PT Indofood Sukses Makmur T...	1865879570000...	
10	UNTR	PT United Tractors Tbk	1540282480000...	





List the top 5 companies that had the highest net income margin percentage in the latest available year

Row	symbol ▼	company_name ▼	net_margin_percent
1	SRTG	PT Saratoga Investama Sedaya...	92.24519416688...
2	BBCA	PT Bank Central Asia Tbk	47.72534205676...
3	BMRI	PT Bank Mandiri (Persero) Tbk	44.67872040926...
4	PGEO	PT Pertamina Geothermal Ener...	40.26552593234...
5	BBRI	PT Bank Rakyat Indonesia (Per...	36.10121911091...



List the companies with bad debt ratio (liabilites to asset >60%) on 2023

Row	symbol	liabilities_to_assets_
1	BBTN	93.05318054937...
2	BRIS	89.04511361900...
3	BMRI	86.77709547064...
4	BBNI	85.76077591661...
5	BBRI	83.89460509970...
6	BBCA	82.77562775573...
7	UNVR	79.70943020817...
8	TOWR	75.86682495810...
9	EXCL	69.77379959630...
10	ARTO	60.75857068798...



## List the average PE ratio and dividend yield for companies in each sector.

Row	sector ▼	pe_ratio ▼	dividend_yield ▼
1	Basic Materials	109.7829097500...	0.035514285785...
2	Financial Services	69.72811261428...	0.040671429285...
3	Industrials	50.60533665000...	0.061549999999...
4	Communication Services	25.4867324	0.0331600004
5	Healthcare	22.19683299999...	0.035699999999...
6	Consumer Defensive	21.92298089999...	0.032200000166...
7	Consumer Cyclical	14.41757949999...	0.0219999999
8	Utilities	13.7074443	0.048950005
9	Energy	8.3845835	0.089257141385...
10	Technology	<i>null</i>	<i>null</i>



## List companies with the highest net income growth rate in the last two years.

Row	symbol ▼	income_growth ▼	sector ▼
1	BRPT	1384.707220011...	Basic Materials
2	ARTO	354.7351222271...	Financial Services
3	GOTO	128.4381522189...	Technology
4	GGRM	91.54726396974...	Consumer Defensive
5	ICBP	52.38745886256...	Consumer Defensive
6	INCO	36.89253047639...	Basic Materials
7	BRIS	33.88496078336...	Financial Services
8	BMRI	33.73622807924...	Financial Services
9	PGEO	28.47023716035...	Utilities

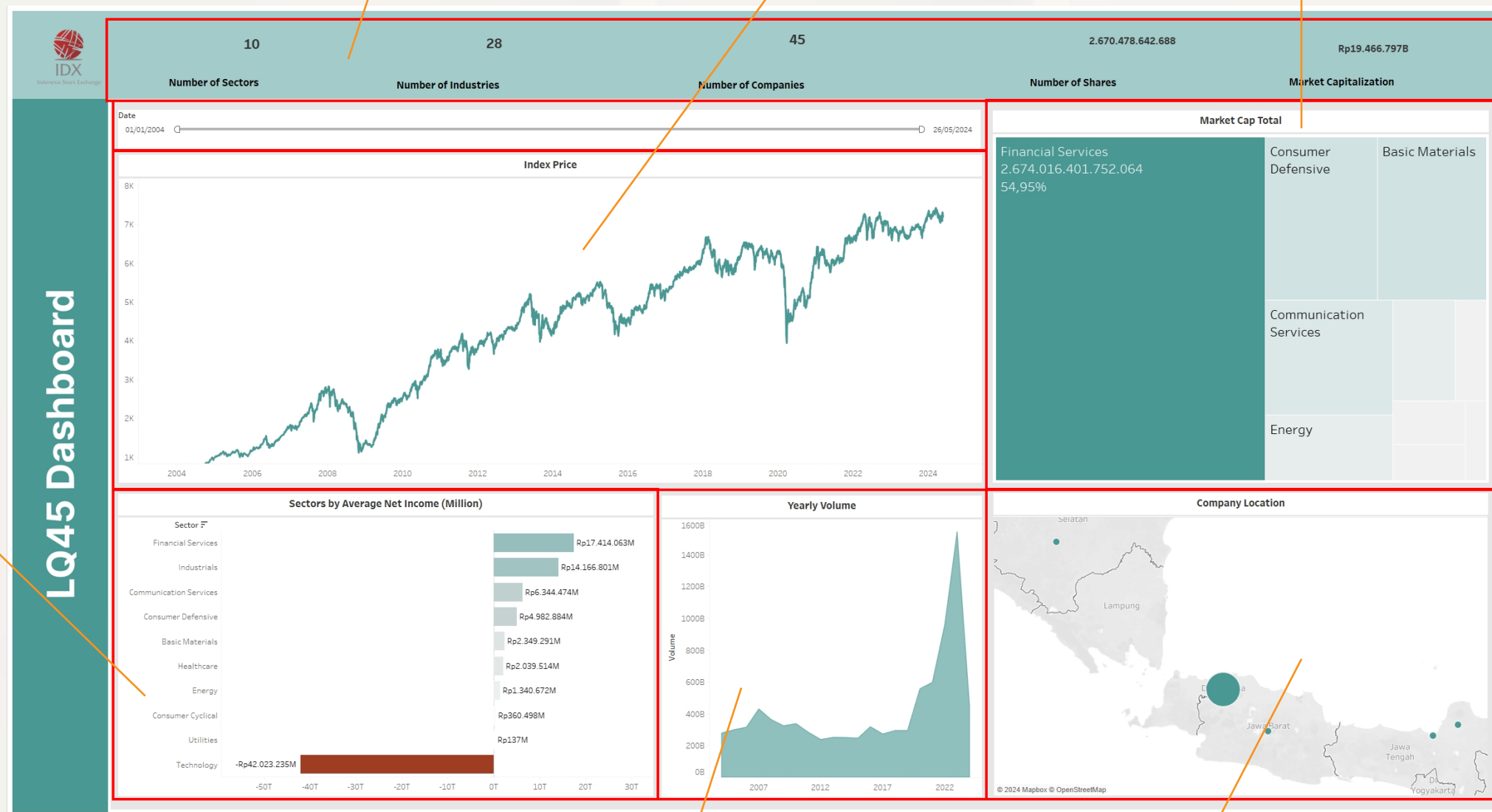


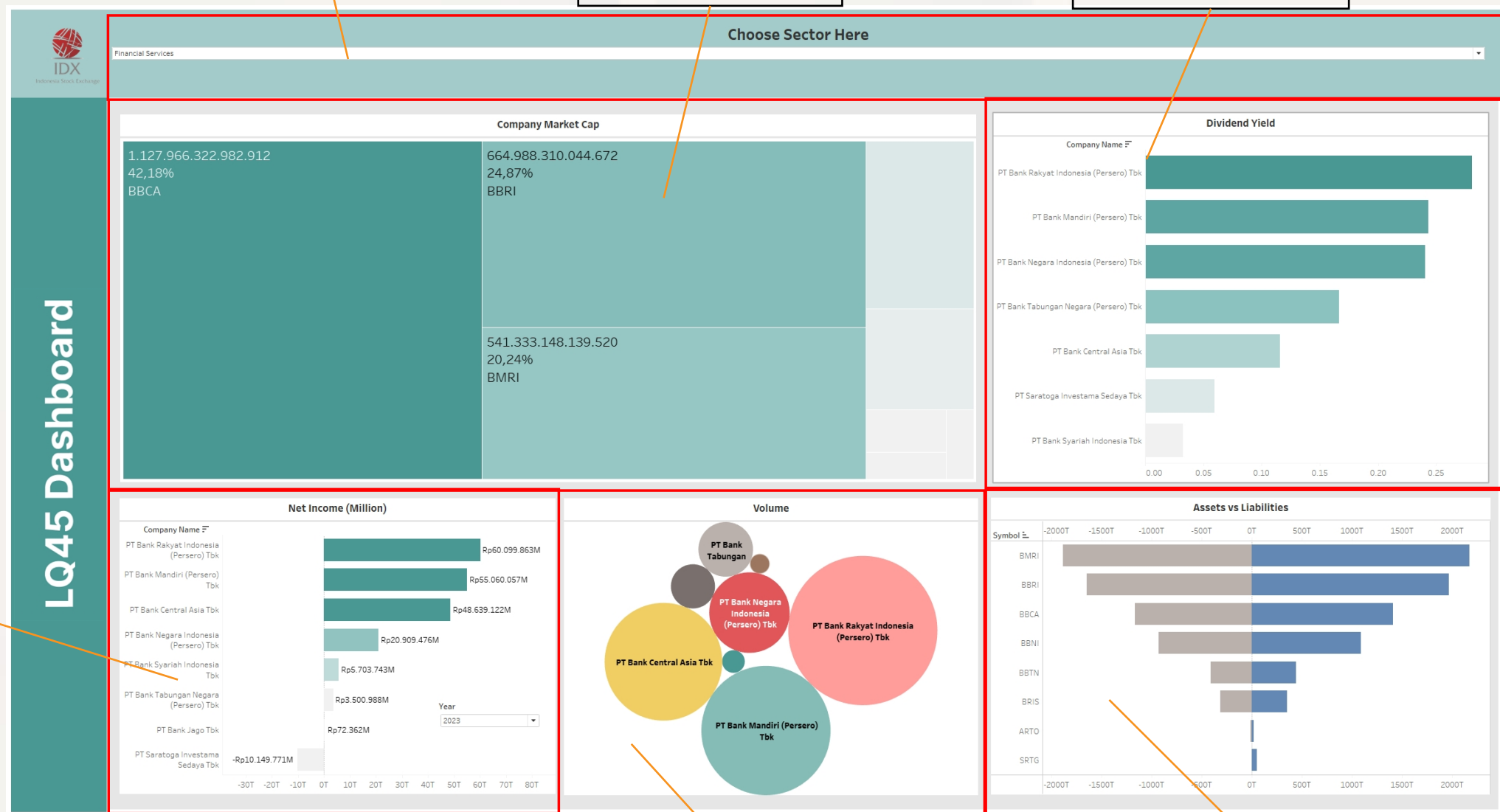
Access the dashboard  
here!

[LQ45 | Tableau Public](#)

# Dashboard Visualization







Dropdown menu to choose a sector for detailed analysis

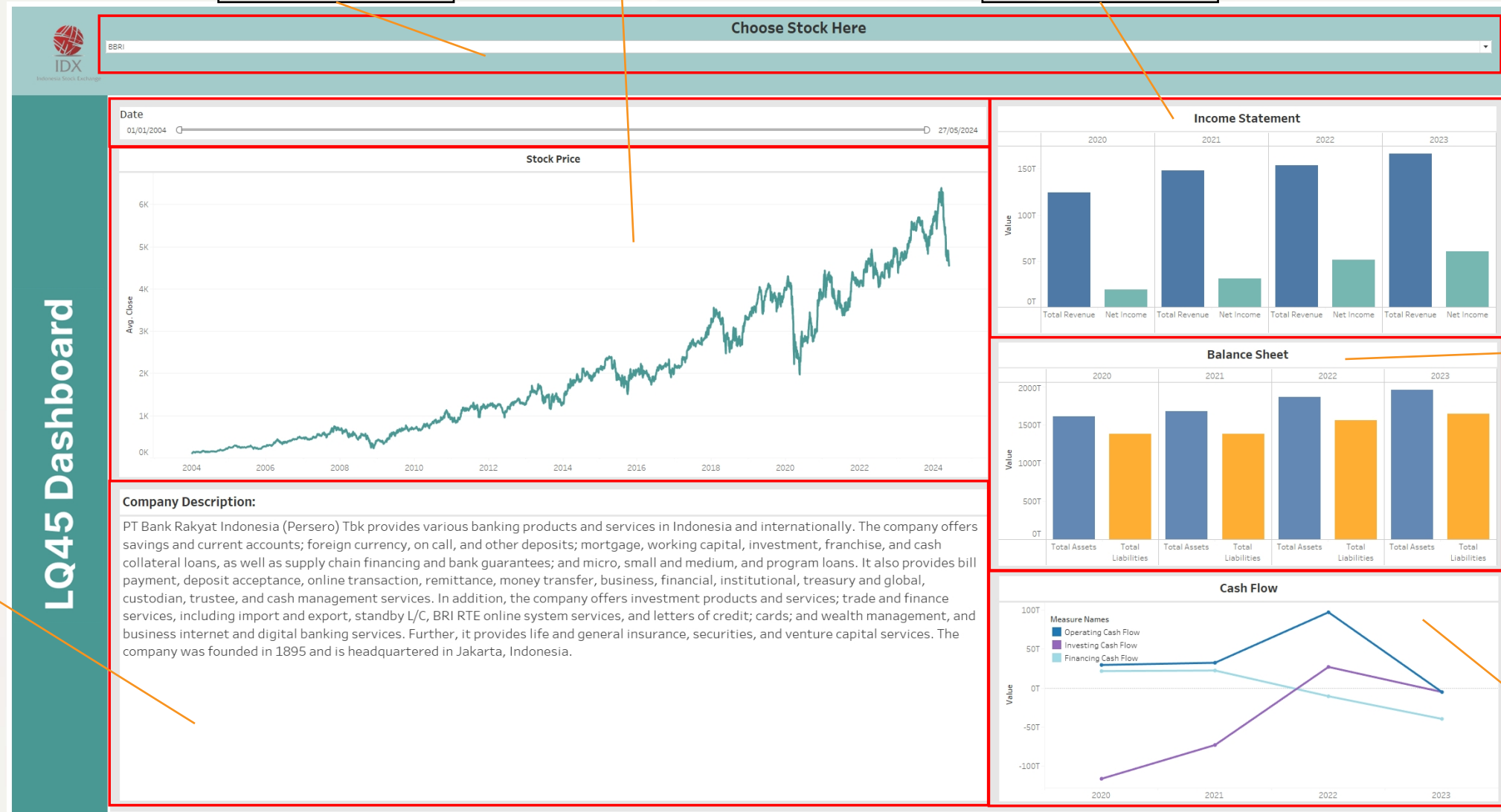
Treemap displaying the market capitalization of companies within the selected factor

Bar chart showing the dividend yield of companies within the sector

The net income of companies within the sector, there is also a filter to select year.

Trading volume of companies within the sector. The size of each bubble representing the relative volume

Comparing the assets versus liabilities of companies within the sector



Text box providing a detailed description of the selected company, including its services, product, and history.

Dropdown menu to choose an individual stock (company) for detailed analysis

Price trend of the selected company over time

Displaying the total revenue and net income each year

Displaying the total revenue and net income each year

Displaying the operating, investing, and financing cash flows for each year



# Thank you

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## My Projects

All

Data Analytics

Data Science/ML

Others



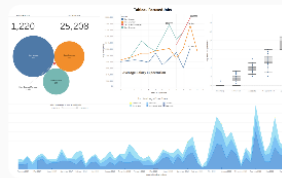
### Analyzing Customer Churn

Tableau Excel

I Investigated a fictional telecom company called Databel. I analyzed why customers are churning and how to potentially reduce churn using Tableau and Excel.

Demo Tableau

Demo Excel

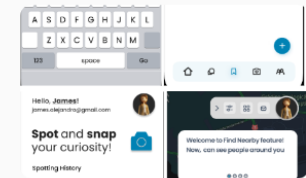


### Analyzing Job Market Data

Tableau

I Investigated a fictional recruitment company to investigate what skills are most in-demand for data scientists, data analysts, and data engineers.

Demo



### Personalized Travel App

Figma UI/UX

Making a Prototype of a personalized travel app with chatbot, vacation planner, and other interesting features with Figma.

Demo

My other works: [Fauzan's Portfolio \(fauzanrrizky.github.io\)](https://fauzanrrizky.github.io)