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Design of Database and Screener for Indonesia Stocks Fundamental Analysis

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Abstrak

Pertumbuhan investor ritel di Indonesia meningkat signifikan dari 1,6 juta pada tahun 2017 menjadi lebih dari 12 juta pada tahun 2024. Meskipun ada tren peningkatan ini, banyak investor terutama pemula masih menghadapi tantangan dalam melakukan analisis fundamental yang efisien. Evaluasi manual dan tidak terstruktur dari metrik keuangan seperti), rasio harga terhadap laba (P/E), laba per saham (EPS, rasio harga terhadap buku (P/B), laba atas ekuitas (ROE), laba bersih, rasio utang terhadap ekuitas (D/E), dan arus kas masih umum. Studi ini mengusulkan pengembangan sistem basis data berbasis MySQL dan preset screener yang mengotomatiskan manajemen data keuangan dan penyaringan saham menggunakan prosedur tersimpan. Screener yang dirancang secara efektif mengintegrasikan kriteria analisis keuangan utama dan memungkinkan pemilihan saham yang sistematis, cepat, dan akurat. Hasilnya menunjukkan potensi sistem untuk berfungsi sebagai landasan teknis untuk alat analisis saham yang lebih cerdas dan untuk mendukung pengambilan keputusan investasi berbasis data di pasar modal Indonesia.

Kata Kunci: *Investasi Saham, Analisis Fundamental, Stock Screener, MySQL, Stored Procedure, Database Keuangan*

Abstract

The growth of retail investors in Indonesia has increased significantly, rising from 1.6 million in 2017 to over 12 million in 2024. Despite this upward trend, many investors particularly beginners still face challenges in performing efficient fundamental analysis. Manual and unstructured evaluation of financial metrics such as), price-to-earnings ratio (P/E), earnings per share (EPS, price-to-book ratio (P/B), return on equity (ROE), net income, debt-to-equity ratio (D/E), and cash flow remains common. This study proposes the development of a MySQL-based database system and screener preset that automates financial data management and stock filtering using stored procedures. The designed screener effectively integrates key financial analysis criteria and enables systematic, fast, and accurate stock selection. The results demonstrate the potential of the system to serve as a technical foundation for smarter stock analysis tools and to support data-driven investment decision-making in the Indonesian capital market.

Keywords: *Stock Investment, Fundamental Analysis, Stock Screener, MySQL, Stored Procedure, Financial Database*

1. Introduction

Indonesia is a country with significant investment growth potential, particularly in the stock market sector. Public interest in stock investment has shown a substantial increase in recent years. Indonesian Central Securities Depository (KSEI) stated that, the number of domestic retail investors surged to over 12 million in 2024, a dramatic rise from approximately 1.6 million in 2017. This growth has been driven by easier access to technology, improved financial literacy, and the relatively higher return potential of stocks compared to other financial instruments[1]. Among various sectors, the mining sector including coal, gold, and nickel has become a major attraction for investors due to its substantial contribution to the national Gross Domestic Product (GDP) and export performance[2].

The vast potential of Indonesia's stock market also presents challenges for many individuals in making sound investment decisions. Fundamental analysis is one of the key indicators supporting decision-making, involving the assessment of financial statement data such as net income, cash flow, equity, and critical financial ratios such as PBV, PER, ROE, and DER. This analysis requires in-depth understanding, considerable time, and reliable data access [3]. These challenges become even greater when analysis is conducted manually collecting financial data from separate annual and quarterly reports, performing calculations, and interpreting results independently making the process prone to errors and inconsistencies [4].

The emergence of database-driven stock screening systems offers a solution to the demand for fast and accurate analysis based on fundamental indicators, whether for growth, dividend, or turnaround investment strategies. However, some may question the system's ability to screen stocks objectively and comprehensively. Such skepticism, though, should not be grounds to reject its implementation, as no single system can fully accommodate every investor's preferences, and bias can also occur in non-integrated manual analysis processes [5]

MySQL, a widely used relational database management system, offers various features such as efficient data storage and support for stored procedures, which enhance query execution performance and enable faster, more structured data processing [6]. Stored procedures are SQL command sets stored on the server, enabling repeated execution, reducing query duplication, and enhancing security. Supported by the PL/SQL engine, they also allow flexible application feature development based on user needs [7].

Therefore, this study aims to design a financial database system and develop a preset screener capable of automating the fundamental analysis process. The system is designed to store historical and periodic financial data (quarterly or annually) and automate the calculation of key financial ratios according to predefined criteria. The main contribution of this research is to provide a data-driven tool that enables investors and analysts to screen stocks systematically and accurately, according to their investment strategies. The results are expected to serve as a technical foundation for the development of more advanced and flexible stock screening systems in the future, while also enhancing investment literacy and decision-making effectiveness in Indonesia's capital market.

2. Literature Review

The literature review discusses theoretical explanations related to the implementation of mechanisms. Its purpose is to provide a general overview of the system to be developed, the mechanisms within the system, and the definitions employed throughout the research.

2.1. Database Management System (DBMS)

Database Management System *(*DBMS*)* is a system that enables structured and efficient data management while ensuring data security and reliability. It is applied in databases that record activities such as user access, data modifications (*Data Manipulation Language* / DML), structural changes (*Data Definition Language* / DDL), and access rights (*Data Control Language* / DCL) [8]. DBMS also functions to control the creation, maintenance, processing, and utilization of databases on a large scale, while facilitating data manipulation. There are various types of DBMS, one of the most popular being MySQL, an open-source DBMS widely used globally.[9].

2.2. MySQL

MySQL is a program that functions to receive and transmit data quickly using SQL (Structured Query Language) commands. MySQL accesses a database that acts as the server, while the application or program utilizing it functions as the client [6]. MySQL is one of the most widely used database servers. It can run on various operating systems such as Linux and Windows, and is favored due to its easy-to-understand syntax and support for popular programming languages such as Java, PHP, and Python [10].

2.3. Stored Procedure

Stored procedure is a collection of SQL instructions stored and executed directly by the Database Management System (DBMS) to perform specific tasks automatically, such as data manipulation, validation, or reporting. Stored procedures allow business logic to be encapsulated within the database, enabling repeated execution without rewriting code, while also enhancing efficiency, flexibility, and security for example, by limiting direct access to data tables and generating security alerts that do not necessarily have to be real-time as in triggers [11].

2.4. Stock Screener

Stock screener is a tool or application used by investors to filter stocks based on specific criteria that align with their preferences or investment strategies. This tool allows to define stock search parameters, which may include various factors such as stock price, market capitalization, financial ratios, trading volume, industry sector, and more [12]. These search criteria can also be customized according to investment goals, for example by adding or removing indicators, setting numerical thresholds, or using logical operators such as “and” or “or” to narrow down the results. Once the criteria are set, the stock screener generates a list of stocks that meet the specified conditions, typically displayed in a table containing information such as stock name, ticker symbol, current price, trading volume, and other relevant data [13].

2.5. Stock

Stock is a represents partial ownership of a company, where the proportion of ownership is determined by the number of stock held. A stock is also described as a piece of paper that indicates ownership in the issuing company. The benefits of owning shares come from dividends and capital gains, which are the difference between the selling and buying prices of the stock. Stock price fluctuations are influenced by the mechanism of supply and demand [14], thus investors need to analyze movements of price using technical or fundamental analysis. Technical analysis using charts, visual signals, support and resistance areas to predict price movements [15], while fundamental analysis evaluates stock performance based on the company's financial statements. As a financial instrument, stocks can be in the form of common or preferred shares, which provide rights to the company's assets, income, and participation in the General Meeting of Shareholders, and reflect the company's value in the capital market.

2.6. Fundamental Analysis

Fundamental stock analysis is the process of evaluating a stock’s intrinsic value based on the company’s fundamental factors. These factors include financial statements, business prospects, industry conditions, and the risks faced by the company, such as profit and loss reports, balance sheet reports, and cash flow reports. Investing through fundamental analysis is an important tool for selecting high-quality stocks with strong growth potential. The main goal is to assess whether a stock is fairly valued and whether it represents a viable investment. The analysis also uses financial statement data to evaluate revenue growth, profitability, and the company is able to generate or print cash flow. Financial ratios such as P/E, P/S, and P/B are used to compare the stock’s valuation with its financial performance [16]

3. Reseach Methods

To realize the design of this screener, a structured and systematic research method is required. This study adopts the Research and Development (R&D) approach, which involves several stages. The process begins with identifying problems related to the need for stock analysis. Subsequently, data is collected through literature review and examination of company financial reports to gain a more comprehensive understanding of system requirements. The next stage involves system design, which includes developing the screening logic based on criteria used in fundamental analysis.

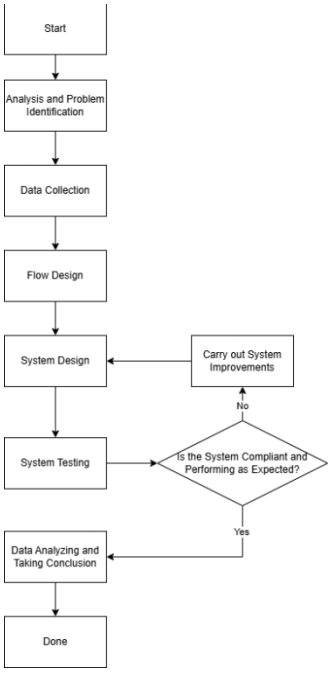

Figure 1. Flowchart of Research and Development (R&D) Method

The system design begins with the development of a workflow as the foundation for building the system and data-driven screening procedures. The design includes the database structure using MySQL, covering table creation, data relationships, and the implementation of stored procedures to execute preset screeners. Once the design process is complete, system testing is conducted to ensure that the preset queries produce screening results that match the defined criteria. This testing covers aspects such as result accuracy, execution speed, and data integrity. If discrepancies are found, revisions and retesting are carried out until the system functions optimally. All test results are then collected and analyzed to evaluate the overall performance of the system.

3.1. General System Overview

These stages can generally be seen in Figure 2. This study consists of two main components to ensure the system functions properly and achieves its objectives. The first component is a Python script used to import data from Excel files into the database. The second component is an SQL script in the form of a stored procedure, which is used to run the stock screener and generate stock information based on the preset selected by the user.

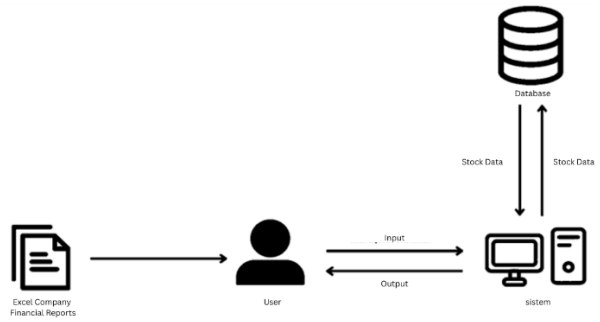

Figure 2. General System Overview

Figure 2 provides an overview of the screener system. At the initial input stage, the data used is sourced from various financial reports that include fundamental information and the company's financial ratios. The data is first entered into an Excel import script written in the Python programming language. The system then processes the stock data and stores it in the system's database using a relational database (MySQL) to hold all financial data. Next, the user selects a screening preset based on the desired investment strategy. Once the data is processed, the system produces an output in the form of stock screening results that meet the defined fundamental criteria. The output consists of a list of recommended stocks based on the indicators defined in the selected preset.

3.2. Screener Flowchart

Screener flowchart is a diagram used to illustrate the workflow or process flow of a system. It effectively depicts the various steps or actions that occur within a specific process, making it easier to understand complex systems. In this study, the author uses a flowchart as a guiding tool in the development of the screener system using stored procedures.

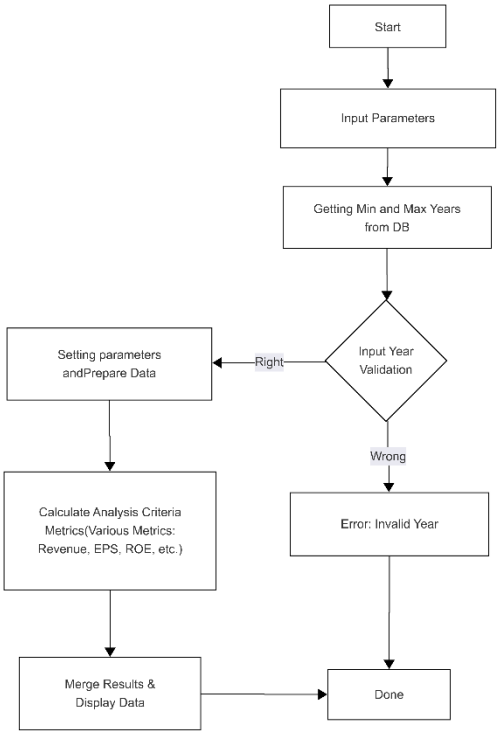

Figure 3. Screener Flowchart

Figure 3 is a flowchart that illustrates the logic used in the preset within the stored procedure. The flowchart describes the stock screening procedure starting from the input of parameter values and the year selected by the user. It continues with retrieving the available start and end years, followed by validating the input year against the data in the database. If the input year is invalid, the process is immediately terminated with an error message. If valid, the system proceeds to prepare the data and calculate financial metrics such as revenue growth, EPS, ROE, and other ratios according to the selected preset criteria. The calculation results are then compiled and presented as the final output, consisting of a list of stocks that meet the criteria, after which the process is completed.

3.3. Data Import Flowchart

The Data Import Flowchart is a flowchart that illustrates the processing flow of financial data from an Excel file into a MySQL database. The design of the blockchain structure within this system is illustrated in Figure 4.

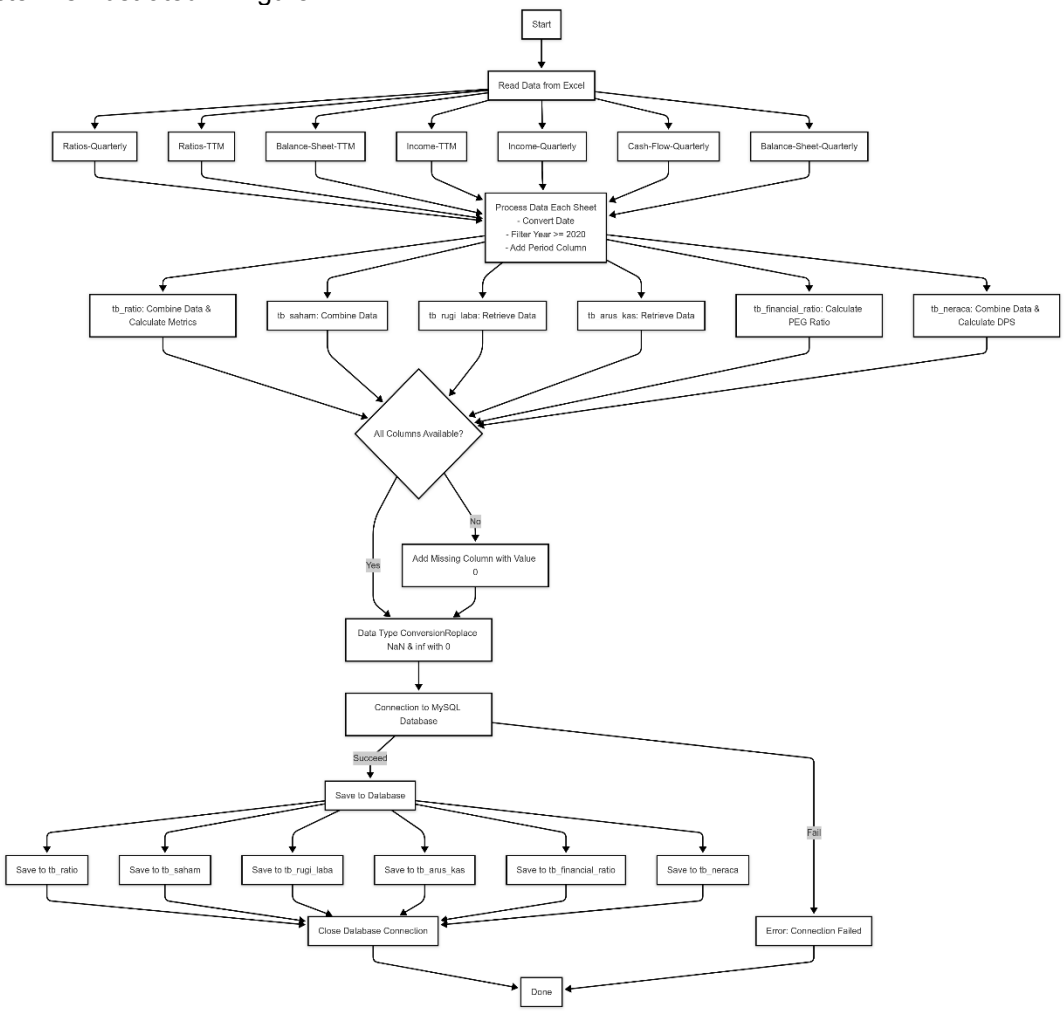

Figure 4. Data Import Flowchart

Figure 4 is a flowchart illustrating the logic used for data import. The process begins with reading multiple sheets such as ratios, balance sheets, and income statements. Each sheet is processed by converting dates, filtering by year, and adding a period column. The data is then structured to form tables such as tb_ratio, tb_saham, and others. After ensuring all required columns are present and checking for missing data in the Excel sheets, the system will automatically fill in missing values with zero. The data is then converted according to its data type, with rounding applied where necessary. Next, the system attempts to save the data into the

database if the connection is successful, the data is inserted into the corresponding tables and the connection is closed; if the connection fails, the process is terminated.

3.4. Physical Data Model

The Physical Data Model (PDM) is a schema used to implement the initial concept of a database, making it ready for design and development. The following is the Physical Data Model for the design of a database intended for fundamental stock analysis.

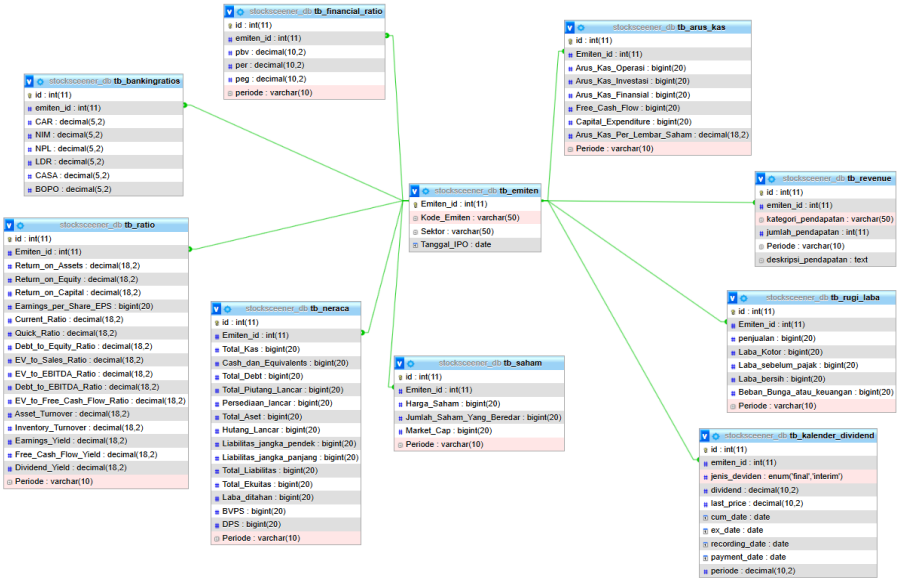

Figure 5. Physical Data Model

Figure 5 represents the Physical Data Model (PDM) of the fundamental valuation database design for analyzing stocks in Indonesia. The database design consists of ten tables that are interconnected. This PDM serves as a representation of the data flow within the system.

3.5. Algorithm Formula

The stock screener algorithm in this study is designed using stored procedures within a MySQL database system. Each of the thirteen available analysis presets has its own formula and calculation logic, but they share core calculations such as CAGR and Growth (YoY, 3Q, 2Q). The following is an explanation of each component of the calculation formulas used in the development of the screener.

$$CAGR = \left(\frac{V_{final}}{V_{begin}} \right)^{\frac{1}{t}} - 1 \quad (1)$$

The CAGR (Compound Annual Growth Rate) formula is used to measure the average annual growth rate of a value over a period of several years. It is calculated by comparing the current value (V_{final}) to the initial value (V_{begin}), raising the result to the power of 1 divided by the number of growth years ($\frac{1}{t}$), and then subtracting one (-1).

$$Growth = \left(\frac{V_{last\ year} - V_{previous\ year}}{V_{previous\ year}} \right) x\,100\,\% \quad (1)$$

The growth calculation formulas for Year-over-Year (YoY), 3-Quarter, and 2-Quarter growth use the same basic formula. These calculations measure the difference in current year value ($V_{last\ year}$) and the previous year's value ($V_{previous\ year}$), divided by the value used in the previous

year ($V_{previous\ year}$), and multiplied by 100% to yield the growth percentage. This formula is used to assess a company's annual performance in terms of sales, earnings, or profitability.

4. Result and Discussion

The Results and Discussion section presents the output display of the screener, showcasing the final preset criteria implemented in MySQL. This section provides a comprehensive overview of the outcomes of the developed system.

4.1. Preset Screener Display Results in MySQL

The display of the preset screener system in MySQL shows the results of the criteria design created by the author, in the form of a list of stocks that appear after the screening process is carried out based on the available presets.

(a)

emiten_id	Kode_Emiten	Tahun Input	Kuartal Terakhir	Revenue Growth (3Y CAGR) (%)	Revenue Growth YoY (%)	Revenue Growth (3Q) (%)	Revenue Growth (2Q) (%)
17	UNTR	2024	2024Q4	19.15	4.54	-3.95	-0.50
19	MAPI	2024	2024Q4	28.03	8.23	-8.61	14.78
29	CLEO	2024	2024Q4	34.70	29.03	-3.45	5.51

(b)

EPS Growth (3Y CAGR) (%)	EPS Growth YoY (%)	EPS Growth (3Q) (%)	EPS Growth (2Q) (%)	Return on Equity (%)	ROE Growth YoY (%)
24.65	-5.25	18.02	-34.95	21.01	-19.22
47.55	-7.02	3.27	16.67	15.11	-19.63
36.32	52.00	-9.09	22.22	24.82	19.85

(c)

ROE Growth (3Q) (%)	ROE Growth (2Q) (%)	Debt to Equity Ratio	Kuartal Terakhir
3.02	-13.72	0.22	2024Q4
3.35	-0.85	0.67	2024Q4
-0.50	-0.08	0.24	2024Q4

Figure 6. Preset_Growth_Focus Display

Figure 6 shows the display of the Preset_Growth_Focus. This preset analyzes the financial performance of listed companies based on parameters such as revenue growth, EPS, ROE, and the debt-to-equity ratio. It receives input in the form of a reference year and respective metrics, where the procedure validates the year, calculates the 3-year CAGR for revenue and EPS, evaluates ROE and DER for the latest quarter, calculates YoY and QoQ growth for key metrics, and then stores the results in a temporary table before combining them into a comprehensive report displaying the companies that meet the specified criteria.

(a)

emiten_id	Kode_Emiten	Tahun Input	Kuartal Terakhir	Revenue Growth (CAGR 3 Tahun) (%)	Revenue Growth Tahunan (YoY) (%)	Revenue Growth (3Q) (%)
1	ACES	2024	2024Q4	9.46	12.75	-4.37

(b)

Revenue Growth (2Q) (%)	Operating Income Margin (%)	Income Growth Tahunan (YoY) (%)	Income Growth (3Q) (%)	Income Growth (2Q) (%)
12.47	12.62	13.68	-27.00	43.68

(c)

Operating Cash Flow Rata-rata 3 Tahun	Operating Cash Flow Tahunan	Operating Cash Flow Growth Tahunan (YoY) (%)	Operating Cash Flow (3Q)
917.17 Miliar	802.58 Miliar	-24.57	179.98 Miliar

Operating Cash Flow (2Q)	Operating Cash Flow Growth (2Q) (%)	EPS Growth (CAGR 3 Tahun) (%)	EPS Growth Tahunan (YoY) (%)	EPS Growth (3Q) (%)
319.61 Miliar	-232.16	8.24	18.18	-30.92

(d)

EPS Growth (2Q) (%)	Price to Book Value (PBV)	PBV Kuartal	Debt to Equity Ratio	Debt Kuartal	EV/EBITDA	EV/EBITDA Kuartal
58.33	1.38	2024Q4	0.14	2024Q4	4.57	2024Q4

Figure 7. Preset_Saham_Turnaround Display

Figure 7 displays the table of the Preset_Saham_Turnaround. The procedure is designed to analyze the financial performance of listed companies that demonstrate potential for a turnaround, based on metrics such as revenue growth, operating margin, price to book value (PBV) ratio, debt to equity ratio, EPS growth, and the EV/EBITDA ratio.

(a)

emiten_id	Kode_Emiten	Tahun Input	Kuartal Terakhir	Price Book Value < ?	Price Earning Ratio < ?	Price Earning Ratio Growth (3Q) (%)
7	ASII	2024	2024Q4	0.93	5.78	-5.38
25	AUTO	2024	2024Q4	0.70	5.12	-1.12
33	ERAA	2024	2024Q4	0.83	6.55	-0.12

(b)

Price Earning Ratio Growth (2Q) (%)	Dividend Yield > ? (%)	Return On Equity > ? (%)	Return On Equity Growth Tahunan (YoY) (%)
13.11	10.68	15.97	0.50
-3.21	8.79	13.86	5.29
-2.09	4.01	12.69	-2.53

(c)

Return On Equity Growth (3Q) (%)	Return On Equity Growth (2Q) (%)	Dividend Payout Ratio < ? (%)	Free Cash Flow Yield > ? (%)	FCF Yield Periode
0.51	-2.80	48.51	14.03	2024Q4
0.71	-4.28	54.29	13.89	2024Q4
5.25	-10.70	0.00	21.92	2024Q4

(d)

Free Cash Flow Tahunan	Free Cash Flow Growth Tahunan (YoY) (%)	Free Cash Flow (3Q)
27.83 Triliun	130.68	6.19 Triliun
1.54 Triliun	69.15	461.83 Miliar
1.40 Triliun	-48.76	1.30 Triliun

(e)

Free Cash Flow (2Q)	Free Cash Flow Growth (2Q) (%)
2.97 Triliun	44.48
-45900000000.00 Rp	-105.89
2.61 Triliun	11.28

Figure 8. Preset_Saham_Focus_Value Display

Figure 8 displays the table of the Preset_Saham_Focus_Value. The procedure is designed to analyze the financial performance of listed companies with a focus on value investing strategies, based on metrics such as price-to-book value (PBV) ratio, price-to-earnings (PER) ratio, dividend yield, return on equity (ROE), dividend payout ratio, and free cash flow yield.

(a)

emiten_id	Kode_Emiten	Tahun Input	Price Book Value < ?	Price Earning Ratio < Industry Average	Return On Equity > ? (%)
7	ASII	2024	0.93	5.78	15.97
17	UNTR	2024	0.93	4.41	21.01
25	AUTO	2024	0.70	5.12	13.86

(b)

ROE Growth Tahunan (YoY) (%)	ROE Growth (3Q) (%)	ROE Growth (2Q) (%)	Debt-to-Equity Ratio < ?	Positive Cash Flow Annual
-6.28	0.51	-2.80	0.47	45.03 Triliun
-19.22	-2.82	-13.72	0.22	30.94 Triliun
0.29	0.71	-4.28	0.05	2.11 Triliun

(c)

Cash Flow Growth Tahunan (YoY) (%)	Cash Flow Growth (3Q) (%)	Cash Flow (3Q) Value	Cash Flow Growth (2Q) (%)	Cash Flow (2Q) Value
33.44	0.08	10.61 Triliun	32.17	8.14 Triliun
75.23	54.20	7.70 Triliun	188.50	8.53 Triliun
42.62	28.63	602.16 Miliar	-80.49	164.67 Miliar

(d)

EPS Growth (CAGR 3 Tahun) > ? (%)	EPS Growth Tahunan (YoY) (%)	EPS Growth (3Q) (%)	EPS Growth (2Q) (%)
16.45	0.48	4.54	-18.22
24.65	-5.25	-1.27	-34.95
48.57	10.73	2.27	-1.87

Figure 9. Preset_Value_Investing Display

Figure 9 displays the table of the Preset_Value_Investing. The procedure is designed to analyze the financial performance of listed companies with a focus on value investing strategies, based on metrics such as price to book value (PBV) ratio, debt to equity ratio, price-to-earnings (PER) ratio compared to the industry average, earnings per share (EPS), and return on equity (ROE) growth.

(a)

emiten_id	Kode_Emiten	Tahun Input	Kuartal Terakhir	Revenue Growth (CAGR 3 Tahun) > ? (%)	Revenue Growth YoY (%)	Revenue Growth 3Q (%)
17	UNTR	2024	2024Q4	19.15	4.54	2.57
19	MAPI	2024	2024Q4	28.03	8.23	8.02
20	AMRT	2024	2024Q4	11.67	10.55	0.81
23	AKRA	2024	2024Q4	14.64	-7.98	1.45
27	BBRI	2024	2024Q4	11.78	27.37	3.24
29	CLEO	2024	2024Q4	34.70	29.03	4.72

(b)

Revenue Growth 2Q (%)	EPS Growth (CAGR 3 Tahun) > Industry Average (%)	EPS Growth YoY (%)	EPS Growth 3Q (%)	EPS Growth 2Q (%)
-0.50	24.65	-5.25	-1.27	-34.95
14.78	47.55	-7.02	5.14	16.67
3.49	17.37	-7.32	-2.35	20.00
1.56	27.91	-19.29	14.21	58.33
-34.12	13.53	0.00	-1.20	-0.99
5.51	36.32	52.00	7.41	22.22

(c)

Debt-to-Equity Ratio < ?	PEG Ratio < ?	Return on Equity > ? (%)	ROE Growth YoY (%)	ROE Growth 3Q (%)	ROE Growth 2Q (%)
0.22	-0.25	21.01	-19.22	-2.82	-13.72
0.24	-1.90	15.11	-19.63	-5.98	-0.85
0.11	-3.67	19.22	-18.28	-5.43	-17.40
0.39	-0.54	19.24	-22.07	-5.71	-18.51
0.59	-1.52	18.97	-1.71	-2.75	0.26
0.23	0.83	24.82	19.85	3.18	-0.08

(d)

Operating Margin Stabil atau Meningkat (%)	Operating Margin Growth YoY (%)	Operating Margin Growth 3Q (%)	Operating Margin Growth 2Q (%)
20.88	-14.28	-4.85	-35.69
7.96	-18.28	1.52	-1.80
3.51	-15.25	-4.44	17.60
6.94	-16.65	15.83	72.20
36.59	-20.29	6.34	52.38
20.33	13.74	2.10	16.82

(e)

Earnings Quality Ratio	Earnings Quality Growth YoY (%)	Earnings Quality Growth 3Q (%)	Earnings Quality Growth 2Q (%)
1.50	83.72	99.10	340.82
3.26	135.66	-421.12	-8.27
2.58	29.50	79.10	-36.47
0.88	-73.13	-369.45	-83.29
0.78	-600.00	-59.82	200.00
1.31	-27.44	9.46	-26.11

Figure 10. Preset_Growth_Investing

Figure 10 displays the table of the Preset_Growth_Investing. The procedure is designed to analyze the financial performance of listed companies with a focus on growth investing strategies, based on metrics such as revenue growth, debt to equity ratio, price/earnings to growth (PEG), return on equity (ROE), earnings per share (EPS) growth, and earnings quality.

(a)

emiten_id	Kode_Emiten	Tahun Input	Kuartal Terakhir	EPS Quartal Streak	EPS Growth (CAGR 3 Tahun) (%)	EPS Growth (YoY) (%)	EPS Growth (3Q) (%)
17	UNTR	2024	2024Q4	11	24.65	-5.25	18.02
19	MAPI	2024	2024Q4	9	25.21	-7.02	3.27
20	AMRT	2024	2024Q4	9	17.37	-7.32	15.00
23	AKRA	2024	2024Q4	12	27.91	-19.29	-24.67
27	BBRI	2024	2024Q4	11	13.53	0.00	-3.96

(b)

EPS Growth (2Q) (%)	Return On Equity (%)	ROE Growth YoY (%)	ROE Growth (3Q) (%)	ROE Growth (2Q) (%)	Debt to Equity Ratio
-34.95	21.01	-19.22	3.02	-13.72	0.22
16.67	15.11	-19.63	3.35	-0.85	0.24
20.00	19.22	-18.28	12.10	-17.40	0.11
58.33	19.24	-22.07	12.86	-18.51	0.39
-0.99	18.97	-1.71	2.04	0.26	0.59

(c)

Positif Operational Cash Flow (TTM)	Cash Flow Growth YoY (%)	Cash Flow Growth (3Q) (%)	Cash Flow Growth (2Q) (%)	PEG Ratio
30.94 T	75.23	114.10	188.50	-0.25
5.96 T	121.96	-20.88	7.13	-1.90
8.14 T	19.42	-3.97	-21.30	-3.67
1.35 T	-78.69	79.04	-72.85	-0.54
24.28 T	-588.45	-386.42	192.92	-1.52

Figure 11. Preset_Garp_Investing Display

Figure 11 displays the table of the Preset_Garp_Investing. The procedure is designed to analyze the financial performance of listed companies with a focus on the GARP (Growth at a Reasonable Price) investment strategy, based on similar metrics consistent earnings per share (EPS) growth streak, annual EPS growth (EPS CAGR), return on equity (ROE), debt to equity ratio (DER), positive operating cash flow, and the price/earnings to growth (PEG).

(a)

emiten_id	Kode_Emiten	Tahun Input	Kuartal Terakhir	Revenue Growth (3 Year CAGR) > ? (%)	Revenue Growth (YoY) > ? (%)	Revenue Growth (3Q) (%)
20	AMRT	2024	2024Q4	11.67	10.55	-0.14
29	CLEO	2024	2024Q4	34.70	29.03	-3.45
30	BMRI	2024	2024Q4	12.89	31.46	14.76

(b)

Revenue Growth (2Q) (%)	EPS Growth (CAGR 3 Tahun) > ? (%)	EPS Growth (YoY) (%)	EPS Growth (3Q) (%)	EPS Growth (2Q) (%)
3.49	17.37	-7.32	15.00	20.00
5.51	36.32	52.00	-9.09	22.22
5.95	25.78	1.19	1.04	-11.45

(c)

Operating Cash Flow Growth (YoY) > ? (%)	Operating Cash Flow Growth (3Q) (%)	Operating Cash Flow Growth (2Q) (%)
19.42	-3.97	-21.30
11.05	-16.11	-10.53
13.88	204.98	-77.89

(d)

Return on Equity > ? (%)	ROE Growth (YoY) (%)	ROE Growth (3Q) (%)	ROE Growth (2Q) (%)	Debt-to-Equity Ratio < ?
19.22	-18.28	12.10	-17.40	0.11
24.82	19.85	-0.50	-0.08	0.23
19.66	-6.87	6.22	-7.79	0.95

Figure 12. Preset_High_Growth_Stock Display

Figure 12 displays the table of the Preset_High_Growth_Stock. The procedure is designed to analyze the financial performance of listed companies with a focus on a high-growth investment strategy, based on metrics such as annual and CAGR revenue of growth, earnings per share (EPS), operating cash flow growth, debt to equity ratio, and the return on equity (ROE).

(a)

emiten_id	Kode_Emiten	Tahun Input	Kuartal Terakhir	Revenue Growth (YoY) > ? (%)	Revenue Growth (3Q) (%)	Revenue Growth (2Q) (%)
30	BMRI	2024	2024Q4	12.35	-7.87	10.58

(b)

Net Income Growth (YoY) > ? (%)	Net Income Growth (3Q) (%)	Net Income Growth (2Q) (%)	Income From Operation Growth (YoY) (%)
1.31	0.95	-11.00	2.30

(c)

Income From Operation Growth (3Q) (%)	Income From Operation Growth (2Q) (%)	Gross Profit Growth (YoY) (%)	Gross Profit Growth (3Q) (%)
0.22	-8.10	45.58	26.84

(d)

Gross Profit Growth (2Q) (%)	Net Income (TTM) > ?	PE Ratio < ?	PE Ratio (3Q Avg) (%)	PE Growth (2Q) (%)
-45.82	55.78 Triliun	9.66	10.21	-7.56

Figure 13. Preset_Lower_Prove_with_Higher_Income Display

Figure 13 displays the table of the Preset_Lower_Prove_with_Higher_Income. The procedure is designed to analyze the financial performance of listed companies with a focus on stocks that have low valuations but generate high revenue, based on metrics such as revenue growth, net income growth, trailing twelve months (TTM) net income, operating income growth relative to gross profit, and the price-to-earnings (PE) ratio.

(a)

emiten_id	Kode_Emiten	Tahun Input	ROE 3Y AVG > ? (%)	ROE Growth (YoY) (%)	ROE Growth (3Q) (%)	ROE Growth (2Q) (%)	EPS Growth Streak >= ? (Years)
2	BBCA	2024	19.79	4.04	1.08	0.19	4
7	ASII	2024	16.02	-6.28	0.68	-2.80	4
20	AMRT	2024	24.08	-1.06	-0.43	-3.04	3
25	AUTO	2024	13.03	2.39	2.89	-2.28	4
27	BBRI	2024	18.46	-1.71	2.04	0.26	3

(b)

Free Cash Flow TTM > ?	FCF Growth (YoY) (%)	FCF Growth (3Q) (%)	FCF Growth (2Q) (%)	Liabilitas Jangka Panjang < ? * Net Income TTM
49.65 Triliun	-6.35	-126.13	-185.92	0 IDR
7.83 Triliun	130.68	263.58	44.48	68.13 Triliun
.92 Triliun	-31.94	-47.29	11.26	1.43 Triliun
.54 Triliun	69.15	-907.32	-105.89	960.32 Miliar
13.95 Triliun	-206.08	-456.43	201.74	0 IDR

(c)

Net Income TTM	Net Income Growth (YoY) (%)	Net Income Growth (3Q) (%)	Net Income Growth (2Q) (%)
54.84 Triliun	12.74	0.87	-3.07
4.05 Triliun	0.63	2.95	-18.01
.40 Triliun	-29.52	24.01	-33.13
.03 Triliun	10.38	3.27	-1.81
60.15 Triliun	0.09	-4.13	-1.78

(d)

Book Value > ?	Book Value Growth (YoY) (%)	Book Value Growth (3Q) (%)	Book Value Growth (2Q) (%)
1449.30 Triliun	3.10	-1.20	1.57
372.25 Triliun	5.64	-1.26	0.55
34.75 Triliun	7.29	5.63	4.49
20.38 Triliun	6.31	-1.15	-0.98
1992.98 Triliun	9.80	-5.06	11.79

Figure 14. Preset_Buffettology_Sustainable Display

Figure 14 displays the table of the Preset_Buffettology_Sustainable. The procedure is designed to analyze the financial performance of listed companies using a Buffettology approach focused on sustainability, based on metrics such as 3-year average return on equity (ROE 3Y AVG), consistent earnings per share growth (EPS growth streak), trailing twelve months free cash flow (FCF TTM), the ratio of long-term liabilities to net income, and a minimum book value.

(a)

emiten_id	Kode_Emiten	Tahun Input	Kuartal Terakhir	Market Cap > ?	Revenue Growth (YoY) > ? (%)	Revenue Growth (3Q) (%)
7	ASII	2024	2024Q4	198.37 Triliun	4.53	-3.36
25	AUTO	2024	2024Q4	10.60 Triliun	2.28	-3.10
33	ERAA	2024	2024Q4	6.38 Triliun	8.55	-0.39

(b)

Revenue Growth (2Q) (%)	Net Profit Growth (YoY) > ? (%)	Net Profit Growth (3Q) (%)	Net Profit Growth (2Q) (%)	Operating Cash Flow > ?
-2.05	0.63	2.95	-18.01	45.03 Triliun
-1.32	10.38	3.27	-1.81	2.11 Triliun
7.62	25.00	5.56	-9.79	2.24 Triliun

(c)

CFO Growth (YoY) (%)	CFO Growth (3Q) (%)	CFO Growth (2Q) (%)	Ekuitas > ?	Equity Growth (YoY) (%)	Equity Growth (3Q) (%)
33.44	80.36	32.17	213.17 Triliun	7.31	-3.30
42.62	203.57	-80.49	14.37 Triliun	7.79	-2.32
-40.92	-72.03	13.62	8.13 Triliun	11.07	-3.31

(d)

Equity Growth (2Q) (%)	Return On Equity > ? (%)	ROE Growth (YoY) (%)	ROE Growth (3Q) (%)
3.02	15.97	-6.28	0.68
1.08	13.86	0.29	3.96
2.99	12.69	12.50	-2.77

(e)

ROE Growth (2Q) (%)	Debt To Equity Ratio < ?	PBV < ?	Current Ratio
-2.80	0.47	0.93	1.33
-4.28	0.04	0.70	1.98
-10.70	0.80	0.83	1.22

Figure 15. Preset_Saham_Undervalue Display

Figure 15 displays the table of the Preset_Saham_Undervalue. The procedure is designed to analyze the financial performance of listed companies with a focus on undervalued stocks and based on market capitalization metrics, revenue growth, net profit growth, operating cash flow (CFO), equity, return on equity (ROE), debt-to-equity ratio, and price-to-book value (PBV) ratio.

5. Conclusion

This study successfully designed a financial database and implemented a preset screener for fundamental stock analysis using MySQL and stored procedures. By integrating structured financial data with automated SQL based screening logic, the system is capable of processing large volumes of stock data efficiently and accurately. Ten preset strategies were developed to reflect various investment approaches such as growth, value, and turnaround, each with relevant financial criteria and performance metrics, including CAGR, YoY and QoQ growth, ROE, DER, and others.System testing showed that the screener functions effectively and is capable of providing stock recommendations in accordance with the selected preset criteria. In addition, the system offers significant benefits in improving the speed, objectivity, and transparency of the stock selection process for investors and analysts.

For future development, this system can be expanded by integrating more dynamic data sources through APIs, adding technical indicators, and building a user-friendly web interface to enhance accessibility and user interaction. This research provides a strong foundation for the

continued development of intelligent, data-driven investment decision support systems in the Indonesian capital market.

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