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Capm-Based Investment Decisions In The Under-Researched Indonesian Business Support Services Sector

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Abstract- — *Accurately valuing stocks is crucial for maximizing investment returns. This study employs the Capital Asset Pricing Model (CAPM) to assess potential undervaluation within the Indonesian Business Support Services sector. The CAPM model is utilized to calculate the expected return of each stock, taking into account its risk relative to the market as a whole. By comparing the actual stock returns observed during the study period with the CAPM-calculated expected returns, the study identifies potential discrepancies that may indicate undervaluation or overvaluation in the market. We analyze four companies listed on the Indonesia Stock Exchange (IDX) from April 2023 to March 2024. Our findings reveal that all four companies exhibit stock returns. Encouragingly, no evidence of overvaluation was found within the sample. The implications of these findings are significant for investors seeking opportunities in the Indonesian Business Support Services sector. This identification suggests that these stocks may not offer attractive investment opportunities with the prospect of generating higher returns than predicted by the CAPM model, While this study sheds light on potential investment opportunities, limitations include the one-year timeframe and the focus on a specific sector.*

Keywords— CAPM; stock returns; risk; IDX; Business Support Services

INTRODUCTION

The investment landscape is a dynamic and ever-evolving ecosystem, The investment landscape is a dynamic battleground, where investors constantly seek promising opportunities with minimal risk. Striking this balance requires a deep understanding of financial instruments and the ability to navigate complex market conditions. Equilibrium models like the Capital Asset Pricing Model (CAPM) have emerged as valuable tools to empower investors in this pursuit.

CAPM establishes a crucial link between an asset's inherent risk and its expected return. By analyzing this relationship, investors gain insights into the potential performance of various investments. This knowledge empowers them to make informed decisions that align with their risk tolerance and return expectations. CAPM aids in stock selection by enabling investors to identify potentially undervalued stocks – those whose actual returns have historically exceeded their expected returns, as suggested by the model. This aligns with the philosophy of value investing, popularized by legendary investor Warren Buffett, who famously stated, "It's far better to buy a wonderful company at a fair price than a fair price at a wonderful company." Conversely, CAPM can also help identify potentially overvalued stocks whose actual returns fall short of their expected returns, indicating a potential risk of overpricing.

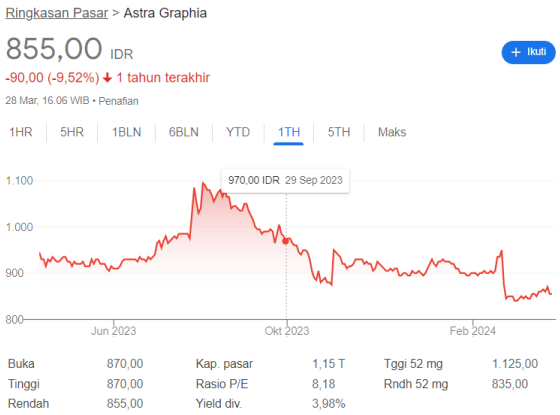
The utility of CAPM extends beyond individual stock analysis. It can be applied to assess the risk profile of non-diversifiable portfolios, such as those holding a limited number of assets due to sector focus or investment restrictions. By

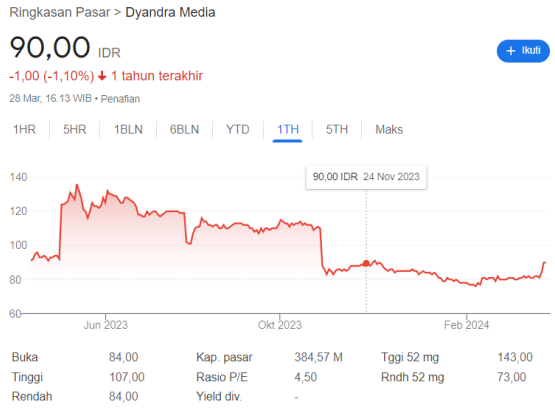
ISSN: 2620-777X

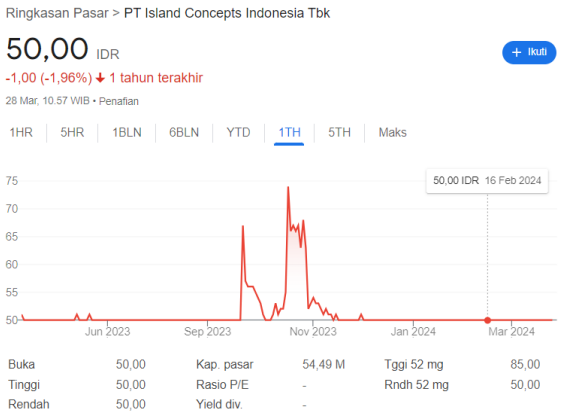
comparing the calculated risk of such portfolios with their predicted rate of return based on CAPM, investors gain valuable insights into their overall investment strategy.

This study leverages the analytical power of CAPM to investigate the Business Support Services sector on the Indonesia Stock Exchange (IDX) from April 2023 to March 2024. This sector presents a unique opportunity for investors due to its relative obscurity. The limited number of companies operating in this space translates to potentially lower market competition, which can be perceived as a factor leading to lower investment risk. However, recent data suggests a decrease in stock prices within the sector over the past year. By employing CAPM, we aim to classify these stocks as undervalued or overvalued based on their risk-return profiles. This classification will offer valuable insights for investors considering this sector, highlighting potential opportunities and potential risks associated with this unique investment space within the Indonesian Stock Market.

Business Support Services Stock's Price April 2023 to March 2024







Based on the description above, the authors are interested in conducting research with the title: CAPM-Based Investment Decisions in the Under-Researched Indonesian Business Support Services Sector.

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RESEARCH OBJECTIVES

This study aims to leverage the Capital Asset Pricing Model (CAPM) to achieve the following objectives:

1. **Classify Business Support Services Stocks:** Evaluate and categorize the investment potential of Business Support Services companies listed on the Indonesia Stock Exchange (IDX) from April 2023 to March 2024.
2. **Identify Undervaluation and Overvaluation:** Employ CAPM to assess whether these stocks are undervalued (actual returns exceed expected returns) or overvalued (actual returns fall short of expected returns) based on their risk-return profiles.
3. **Inform Investment Decisions:** Provide valuable insights for investors considering this sector by highlighting potential opportunities (undervalued stocks) and potential risks (overvalued stocks) identified through CAPM analysis.

LITERATUR REVIEW

Business Support Services Sector in Indonesia

This research investigates the application of the Capital Asset Pricing Model (CAPM) to identify investment opportunities within the Business Support Services sector on the Indonesia Stock Exchange (IDX). Limited research exists specifically on this sector's investment potential. Understanding the unique characteristics of this industry is crucial for applying CAPM effectively.

Stocks and the Business Support Services Sector

Within the world of finance, stocks represent a crucial ownership stake in a company. Investors can purchase these shares to gain a proportional claim on the company's profits and assets. While Business Support Services companies may utilize various funding sources, issuing stocks can be a significant strategy for raising capital to fuel growth and expansion.

Unique Considerations for Business Support Services Stocks

Compared to some established sectors, Business Support Services stocks may exhibit certain unique characteristics. For instance, they might experience higher volatility due to their dependence on specific industries or economic conditions. Additionally, the relative newness of some Business Support Services companies can lead to lower liquidity, meaning it may be more challenging to buy or sell these stocks quickly.

Investment Decisions and Business Support Services Stocks

Investors employ various analytical tools to assess the potential of Business Support Services stocks. Financial ratios like price-to-earnings (P/E) ratio or debt-to-equity ratio can provide insights into a company's profitability and financial health. Industry trends and the overall business environment also play a role in investment decisions.

ISSN: 2620-777X

Challenges in Evaluating Business Support Services Stocks

Evaluating Business Support Services stocks can present certain challenges. Limited historical data for newer companies can make it difficult to assess past performance and future growth potential. Additionally, the dynamic nature of the service industry can make it challenging to predict long-term trends with certainty.

By understanding these aspects of stocks within the Business Support Services sector, we can gain a better foundation for applying the Capital Asset Pricing Model (CAPM) to identify potential investment opportunities.

Investment Decisions and Risk-Return Trade-off

Investors constantly seek a balance between potential returns and investment risk. A core principle in finance is the risk-return trade-off, which states that higher expected returns are generally accompanied by higher risk. Investors utilize various tools and models to analyze this relationship and make informed investment decisions.

The Capital Asset Pricing Model (CAPM)

One of the most widely used models for evaluating risk and return is the Capital Asset Pricing Model (CAPM). Developed by Sharpe (1964) and Lintner (1965), CAPM establishes a theoretical link between an asset's risk and its expected return.

CAPM rests on several key assumptions, including:

- Efficient market: Investors have access to all relevant information, and prices reflect this information accurately.
- Rational investors: Investors act rationally to maximize their expected return for a given level of risk tolerance.
- Single-period model: Investors have a one-period investment horizon.
- Risk aversion: Investors prefer higher returns with lower risk.

CAPM and Investment Analysis

CAPM provides a framework for calculating the expected return of an investment based on its systematic risk, also known as market risk. Systematic risk refers to the portion of an investment's risk that cannot be diversified away through portfolio diversification. The model utilizes the following formula:

$Ri = Rf + \beta i (Rm - Rf)$

Where:

- Ri = Expected return on a particular investment
- Rf = Risk-free rate of return (e.g., Indonesian government bond yield)
- βi = Beta coefficient, a measure of an investment's volatility relative to the overall market (represented by the market return, Rm)
- Rm = Overall market rate of return (e.g., Indonesian Stock Exchange Composite Stock Price Index - IHSG)

By analyzing the beta coefficient and comparing the expected return (calculated using CAPM) with the actual historical return of an investment, CAPM helps identify potential undervalued or overvalued stocks.

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Limitations of CAPM

While CAPM remains a valuable tool, it's important to acknowledge its limitations. The model's assumptions may not perfectly reflect real-world conditions. For example, markets may not be perfectly efficient, and investors may exhibit behavioral biases. Additionally, estimating the risk-free rate and beta coefficient can be challenging.

Alternative Models and Recent Research

Several alternative models have been developed to address CAPM's limitations. These models incorporate factors beyond market risk, such as size, value, and profitability, to explain investment returns. Recent research explores ways to refine CAPM by incorporating these factors or developing multi-factor models.

Justification for Using CAPM in this Study

Despite its limitations, CAPM remains a foundational framework for investment analysis. This study focuses on a relatively under-researched sector (Business Support Services) within the Indonesian market. CAPM provides a valuable starting point to evaluate potential investment opportunities within this sector by considering their risk-return profiles. Further analysis may explore alternative models or incorporate additional factors specific to the Business Support Services industry.

Research Design

This research employs a quantitative descriptive approach to analyze investment opportunities within the Business Support Services sector on the Indonesia Stock Exchange (IDX). Descriptive research aims to systematically describe the characteristics of a population or phenomenon (Suryabrata, 1983). In this study, the population of interest is publicly traded companies operating within the Business Support Services sector on the IDX.

Data Collection

Secondary data will be utilized for this research. The collected data are from the following sources:

- **Indonesia Stock Exchange (IDX):** Monthly closing stock prices for companies listed in the Business Support Services sector will be collected for the period April 2023 to March 2024.
- **Bank Indonesia:** We will obtain the Indonesian government bond yields to estimate the risk-free rate of return used in the CAPM calculations.
- **Yahoo Finance (or alternative financial database):** Additional data points may be collected from Yahoo Finance or a similar financial database. This could include the Jakarta Stock Exchange Composite Stock Price Index (IHSG) to represent the overall market return (Rm) in the CAPM formula.

Data Analysis

The collected data will be analyzed using the following steps:

1. **Data Cleaning and Preprocessing:** The collected data will be meticulously reviewed for any missing values, inconsistencies, or outliers. Any necessary corrections or adjustments will be made to ensure data quality.

ISSN: 2620-777X

2. **Calculation of Expected Return using CAPM:** We will employ the Capital Asset Pricing Model (CAPM) to calculate the expected return for each stock within the Business Support Services sector. The CAPM can be proceed with this following step:
   a. Collecting Data
   Monthly closing stock prices for companies listed in the Business Support Services sector on the Indonesia Stock Exchange (IDX) will be downloaded for the period April 2023 to March 2024 **.**

   b. Calculating the profit level of each stocks

$$Ri = \frac{-P_{t-1}}{P_{t-1}}$$

   R_i = Return of Stock
   P_t = Stock's Closing Price Current Month
   P_{t-1} = Stock's Closing Price Previous Month

   c. Calculating rate of return of the market

$$R_m = \frac{IHSG - IHSG_{t-1}}{IHSGt_{-1}}$$

   R_m = rate of return of the market
   $IHSG_t$ = Market's Closing Price Current Month
   $IHSGt_{-1}$ = Market's Closing Price Previous Month

   d. Calculating Beta (β) of the stock

$$\beta = \frac{Cov(R_i, R_m)}{Var(R_m)}$$

   β = Beta
   R_i = Return of Stock
   R_m = Return of the market

   e. Calculating the risk-free rate of return (Rf) uses the BI rate
   f. Calculating the stock's expected return using CAPM

$$E(Ri) = Rf + \beta i\ [E(Rm)-Rf]$$

3. **Estimating Beta Coefficient:** The beta coefficient (βi) for each stock will be estimated using various methods, such as the historical beta method or the CAPM regression approach.
4. **Classification of Undervaluation and Overvaluation:** By comparing the calculated expected return (using CAPM) with the actual historical return of each stock, we will classify them into categories. Stocks with an actual return exceeding the CAPM-calculated expected return will be considered potentially undervalued. Conversely, stocks with an actual return falling short of the expected return may be overvalued based on their risk profile.

RESULTS AND DISCUSSION

This section presents the findings of the research on applying the Capital Asset Pricing Model (CAPM) to identify potentially undervalued and overvalued stocks within the Business Support Services sector on the Indonesia Stock Exchange (IDX).

ISSN: 2620-777X

Data Analysis and CAPM Calculations

The analysis involved collecting monthly closing stock prices for companies in the Business Support Services sector listed on the IDX for the period April 2023 to March 2024. Additional data points, such as the Jakarta Stock Exchange Composite Stock Price Index (IHSG) and Indonesian government bond yields, were obtained to calculate the market risk premium and risk-free rate, respectively.

Following the CAPM framework, we calculated the following for each stock:

- **Individual Stock Return (Ri):** This represents the average monthly return of a particular stock over the one-year period.
- **Market Return (Rm):** The average monthly return of the overall market, proxied by the IHSG.
- **Risk-Free Rate (Rf):** The estimated return on a risk-free investment, approximated by the yield of Indonesian government bonds.
- **Beta Coefficient (β):** This measures the volatility of a stock's return relative to the market return. It was estimated using a method such as historical beta or CAPM regression.

Classification of Undervaluation and Overvaluation

By comparing the individual stock return (Ri) with the expected return (E(Ri)) for each stock, we were able to categorize them as follows:

- **Undervalued Stocks:** If a stock's Ri consistently exceeded its E(Ri) over the analysis period, it might be considered undervalued. This suggests the stock potentially offers returns higher than what its risk profile suggests.
- **Overvalued Stocks:** Conversely, if a stock's Ri consistently fell short of its E(Ri), it might be overvalued. This indicates the stock's price might not be justified by its underlying risk and potential returns.

List of Companies Included in Research Sample

TABEL 1. List of Companies Included in Research Sample

Sub Industry	Code	Stock Name
Business Support Services	ASGR	Astra Graphia Tbk
Business Support Services	DYAN	Dyandra Media International Tbk
Business Support Services	ICON	Island Concepts Indonesia Tbk
Business Support Services	MFMI	Multifiling Mitra Indonesia Tbk

Results of Individual Stock Return Rate Analysis (Ri)

The monthly rate of return for a stock can be initially estimated by comparing the closing price of the current month (t) to the closing price of the previous month (t-1). This is done by subtracting the previous month's closing price from the current month's closing price and then dividing the result by the previous month's closing price. However, it's important to note that this approach only captures short-term price changes and doesn't account for

ISSN: 2620-777X

dividends. In the context of CAPM analysis, this monthly return calculation can serve as a foundation for estimating annualized returns, which are then used in the CAPM formula.

Individual Stock Returns

TABEL 2. Individual Stock Returns for Period April 2023 to March 2024

No	Code	Ri
1	ASGR	-0.07363
2	DYAN	0.009018
3	ICON	-0.01258
4	MFMI	-0.06778

During the period from April 2023 to March 2024, individual stock returns varied significantly. ASGR experienced a decrease of -0.07363, while DYAN saw a slight increase of 0.009018. Conversely, ICON exhibited a decrease of -0.01258, and MFMI had a notable decrease of -0.06778.

Market Rate of Return for the Period April 2023 to March 2024

TABEL 3. Market Rate of Return for the Period April 2023 to March 2024

Date	Open	High	Low	Close	IHSG
4/1/2023	6805.277	6971.9102	6735.1929	6915.7158	
5/1/2023	6915.716	6920.3359	6562.9551	6633.2612	-0.04084
6/1/2023	6633.261	6744.6440	6578.7559	6661.8789	0.004314
7/1/2023	6661.736	6966.1670	6660.8242	6931.3589	0.040451
8/1/2023	6931.075	7008.4868	6823.7539	6953.2598	0.00316
9/1/2023	6953.26	7046.4751	6900.5869	6939.8921	-0.00192
10/1/2023	6939.892	6992.6270	6666.4102	6752.2109	-0.02704
11/1/2023	6751.939	7109.6089	6639.8242	7080.7412	0.048655
12/1/2023	7080.061	7309.7822	7022.7651	7272.7969	0.027124
1/1/2024	7268.398	7403.5781	7099.0840	7207.9409	-0.00892
2/1/2024	7221.852	7370.8818	7180.3569	7316.1108	0.015007
3/1/2024	7318.666	7454.4482	7238.3389	7365.6641	0.006773
3/27/2024	7364.119	7375.3999	7316.6099	7328.9458	-0.00499
Rm (yr)					0.061773

From April 1st, 2023, to March 27th, 2024, the IHSG fluctuated, starting at 6805.277 and reaching a peak of 7375.3999, then settling at 7328.9458. Throughout this period, it experienced both positive and negative movements.

ISSN: 2620-777X

Notably, on November 1st, 2023, it surged significantly by 0.048655. Overall, the IHSG's yearly return, denoted as Rm (yr), stood at 0.061773.

Results of Systematic Risk Analysis of Each Individual Stock (β)

TABEL 4. Systematic Risk (β) of each Stock for the Period April 2023 to March 2024

No	Code	β
1	ASGR	0.356557555
2	DYAN	-1.563144343
3	ICON	-0.71153964
4	MFMI	4.540217227

For the period from April 2023 to March 2024, the systematic risk, denoted as β, varied across different stocks. ASGR had a β of 0.356557555, indicating a moderate level of systematic risk. DYAN exhibited a negative β value of -1.563144343, suggesting an inverse relationship with the market. ICON had a β of -0.71153964, implying a negative correlation with market movements. In contrast, MFMI had a significantly high β of 4.540217227, indicating a substantial sensitivity to market fluctuations.

Risk Free (Bank of Indonesia)

Risk-Free rate (Rf) from Bank Indonesia were used as an indicator for the Risk-Free Rate (Rf) since this data considered to be relatively risk-free investments, the results of the calculation of the Risk-Free rate are as follows:

Date	Rf (%)
Apr-23	5.75
May-23	5.75
Jun-23	5.75
Jul-23	5.75
Aug-23	5.75
Sep-23	5.75
Oct-23	6
Nov-23	6
Dec-23	6
Jan-24	6
Feb-24	6

ISSN: 2620-777X

Mar-24	6
MEAN	5.875

The risk-free rate, denoted as Rf (%), remained constant at 5.75% from April 2023 to September 2023. It then increased to 6% from October 2023 to March 2024. The mean risk-free rate over this period was calculated to be 5.875%.

Expected Rate of Return Analysis Results [E(Ri)] and Classification of Investment Decision

The Capital Asset Pricing Model (CAPM) analysis helps identify potentially undervalued stocks. Stocks with expected returns (Ri) exceeding the CAPM-calculated expected return (E(Ri)) might be undervalued, suggesting they could offer higher returns than their level of risk suggests. Conversely, stocks with expected returns (Ri) falling short of the E(Ri) might be overvalued.

Expected Rate of Return for the Period April 2023 to Marc 2024 and Grouping of Undervalued or Overvalued Stocks

Code	Name	Return on Stock (Ri)	CAPM	Result	Value	Decision
ASGR	Astra Graphia Tbk	-0.07363	0.06	Ri<CAPM	OVERVALUED	**SELL**
DYAN	Dyandra Media International Tbk	0.009018	0.05	Ri<CAPM	OVERVALUED	**SELL**
ICON	Island Concepts Indonesia Tbk	-0.01258	0.05	Ri<CAPM	OVERVALUED	**SELL**
MFMI	Multifiling Mitra Indonesia Tbk	-0.06778	0.08	Ri<CAPM	OVERVALUED	**SELL**

Based on the CAPM analysis, all stocks - ASGR, DYAN, ICON, and MFMI - are deemed overvalued as their observed returns (Ri) are lower than their expected returns based on CAPM. Therefore, the recommendation is to sell all of these stocks.

CONCLUSION

Based on the CAPM analysis conducted for the stocks ASGR, DYAN, ICON, and MFMI, it is evident that their observed returns (Ri) fall below their expected returns as per the CAPM model. This indicates that these stocks are overvalued in the market. Consequently, the recommendation across all these stocks is to sell. This implies that investors should exercise caution and consider divesting their holdings in these stocks due to the likelihood of their prices being inflated beyond their fundamental values. Such a decision is important for mitigating potential losses and aligning investment strategies with market conditions. Overall, this analysis underscores the importance of utilizing quantitative models like CAPM in investment decision-making to assess stock valuation and manage portfolio risk effectively.

SUGGESTION

ISSN: 2620-777X

This research endeavors to serve as a comprehensive resource for both seasoned investors and prospective individuals considering stock investments. By offering detailed insights and analysis, it aims to furnish investors with valuable references and supplementary information essential for navigating the complexities of the stock market.

Crucially, for investors, prudent allocation of surplus funds into lucrative stocks is paramount. Doing so not only mitigates inherent risks but also advances their objective of attaining anticipated returns. In essence, the research underscores the pivotal role of informed decision-making in optimizing investment strategies and achieving financial objectives. Ultimately, by empowering investors with robust data and analyses, this research seeks to foster a climate of informed investment practices, thereby facilitating more confident and successful investment endeavors in the dynamic landscape of the stock market.

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