

ANALYSIS OF STOCK SELECTION MODEL STRATEGY IN INDONESIA'S CAPITAL MARKET

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Abstract: The impact of investor behavior and decision-making on investment interest in the Indonesian capital market is ultimately tied to the stock selection model used to form an optimal portfolio. Therefore, this study aims to develop an optimal stock selection model in the Indonesian capital market. And thus, the novelty of this study relates to other studies that demonstrate how to improve investment decisions in the capital market in Indonesia. Whereas previous research focused solely on the associations between variables, this study examines the variables themselves. This investigation was carried out in the Greater Jakarta of Jabodetabek (Jakarta, Bogor, Depok, Tangerang, Bekasi). This research utilizes the Fuzzy-Analytical Hierarchy Process (FAHP) methodology. FAHP is the combination of AHP and a fuzzy concept approach. The FAHP method uses qualitative and quantitative data to make decisions. The data collection method employs primary data from the Survey Questionnaire and discussions, secondary data consisting of market data, stock price movement data from the Indonesia Stock Exchange, Indonesian Central Securities Depository, Bank Indonesia, and empirical literature about stock selection models. The results of the analysis indicate that forming the optimal portfolio in the Indonesian capital market involves predicting the price or stock return using a single factor that is thought to impact security. The primary objective assumed to be realized by the optimal portfolio formation approach on the Indonesian capital market is the optimization of stock combinations.

Keywords: investor behavior, investor decision-making, capital market, investment, stocks

Abstrak: Pengaruh investor Behavior dan investor decision making terhadap minat investasi di pasar modal Indonesia yang pada akhirnya dihubungkan dengan model pemilihan saham untuk membentuk portofolio optimal. Oleh karena itu, penelitian ini bertujuan merancang model pemilihan saham dalam membentuk portofolio optimal di pasar modal Indonesia. Sehingga kebaruan penelitian ini dibandingkan dengan penelitian-penelitian lain yaitu untuk menunjukkan bagaimana strategi dalam meningkatkan keputusan dalam berinvestasi di pasar modal di Indonesia. Dimana penelitian-penelitian sebelumnya hanya berfokus pada hubungan antar variabel. Penelitian ini dilakukan di Jabodetabek. Metode yang digunakan dalam penelitian ini yaitu metode Fuzzy- Analytical Hierarchy Process (FAHP). FAHP merupakan kombinasi antara metode AHP dengan pendekatan fuzzy. Metode FAHP digunakan untuk menentukan pengambilan keputusan dengan memasukan data kualitatif dan kuantitatif. Teknik pengumpulan data menggunakan data primer yang diperoleh dari Survey Questioner dan diskusi-diskusi dan data sekunder yang merupakan data pasar, data pergerakan harga saham yang bersumber dari Bursa Efek Indonesia, Kustodian Sentral Efek Indonesia, dan Bank Indonesia, serta literatur empirik terkait model pemilihan saham. Hasil analisis menunjukkan bahwa dalam membentuk portofolio optimal di pasar modal Indonesia adalah dengan memprediksi harga atau return saham dengan menggunakan satu faktor sebagai prediktor yang dianggap berpengaruh terhadap suatu sekuritas. Adapun tujuan utama secara implisit yang ingin dicapai dari strategi strategi untuk membentuk portofolio optimal di pasar modal Indonesia adalah dengan optimalisasi pengkombinasian saham.

Kata kunci: investor behavior; investor decision making, pasar modal, investasi, saham

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INTRODUCTION

In the current global integration era, investment is considered one of the most important factors in a country's economic growth. For investors who want to seek an alternative source of income, financial investments can be made from the capital and money markets. The capital market is a medium to carry out investments that provide the possibility for investors to diversify investments, forming portfolios according to the risks they are willing to bear and the level of profit they expect. The existence of capital markets provides broad benefits for the economy through the development of investments in a country. In general, capital markets that provide a long-term source of financing for the world allow optimal allocation of funding sources. Hence, to benefit from investment activities, investors must be able to be precise in making decisions.

Monowar (2013) discovered that the decision-making process shows high opportunity or is irrational which may cause investors to fall into the wrong decisions or make incorrect estimations. Decision making in general is a complex phenomenon based on the concept of satisfaction that can determine the increase or decrease in utility as an effort to increase satisfaction. Likewise, investment decision-making is carried out rationally to maximize its utility. Therefore, this research was conducted to find out the influence of Investor Behavior and Investor Decision Making on investment interests in the Indonesian capital market which is ultimately linked to the Stock Selection Model to form an optimal portfolio.

Indonesia is one of the world's most populated countries in the world, The high population growth rate in Indonesia is inversely proportional to the low interest in public investment. Many Indonesian people still lack an understanding of the function of the capital market as one of the mediums of investment, as people are more aware of investing in deposits or savings only. The low interest of domestic investors is also driven by a decline in global public investment expectations which is influenced by the increase in interest rates. In addition, the decline in the trend of global raw asking prices, as well as the pressure of the global economic slowdown, especially from the Chinese state, affect the low interest in investing. The investment climate in Indonesia itself is still deeply concerning to foreign investors as Indonesia is considered not a conducive place to invest when compared to other countries.

Other numerous obstacles discourage investors from investing in Indonesian stocks. However, the main factor contributing to the low demand for investors in Indonesia is the lack of investor knowledge regarding capital market finance. Low levels of financial literacy (such as low levels of financial education and difficulty in understanding financial concepts) and higher levels of cognitive bias among individual investors are the primary obstacles that limit their chances of successful stock market participation, according to the results. For the possibility of investment failure, for instance, errors in selecting investment assets can occur.

Nevertheless, the spread of the Covid-19 pandemic outbreak in Indonesia instead contributed to the large number of new investors who began to invest their capital in the Indonesian capital market as an alternative to income. Manurung (2017) explained the consistency of stock selection in the formation of portfolios in the Indonesian capital market by investment managers associated with the company's performance empirical ratio variable. Therefore, the capital market in Indonesia must remain optimistic about any increase in domestic investors, because the capital market will continue to play an important role in the country's economic growth.

In general, the purpose of investors in carrying out investment activities is to obtain profits or yields on investments made. Each investor should first understand the risk by analyzing the amount of risk that emerges. In addition, this increase in the number of investors needs to be maintained in various ways. Indonesia's capital markets must remain optimistic about increasing domestic investors, as capital markets play an important role in maturing developing countries.

The majority of the difficulties faced by investors, particularly during the pandemic, are likely to have contributed to volatile capital market fluctuations. During the pandemic, stock prices were relatively low, but existing institutions were still attempting to adapt to unstable circumstances. As a result, the expected return cannot be optimal while investment literacy remains low. The existence of this COVID-19 pandemic is uncertain, so it is necessary to consider the possibility that it will occur in the future. Risk, according to Reilly and Norton (2007), is the uncertainty of future outcomes or the likelihood of future income loss. Collins (2020) also noted that in the financial environment during the COVID-19 pandemic, investors must be careful to

maintain a diversified, global investment portfolio, as stock markets around the world experience an average decline.

According to Phil (2020), the best time to invest or buy shares is during the covid-19 pandemic, when many people are selling shares and the stock price is low. This is what motivates many new investors during a pandemic. Consequently, investors must evaluate the recommended stocks throughout the pandemic. This also influences investor behavior when selecting stocks.

Financial behavior itself has an important role for investors because it can influence different decision-making between one investor and another (Investor Decision Making). Investor behavior in decision-making is influenced by investors' responses to opportunities and challenges offered by an ever-changing economic environment (Sudirman and Dwidjosumarno 2013). Therefore, investors must look for potential in getting high returns. Shares will choose shares in forming an optimal portfolio. Thus, this research aims to design a Stock Selection Model for forming an optimal portfolio in the Indonesian capital market.

It is anticipated that this research will generate credible alternative determined that may be used with the stock selection model to create an optimal portfolio with the Fuzzy Analytical Hierarchy Process method. Later, these alternative strategies will be assessed based on the primary factors, goals, and actors that can assist in the fulfillment of research objectives.

If other studies only focus on stock models that must be anticipated during the pandemic and optimal portfolio forms that must be analyzed during the pre-pandemic period, then this study aims to address these issues. The novelty of this study is that it fills a gap in previous research by analyzing the correct strategy for choosing the best portfolio model during and after a pandemic.

METHODS

This research was carried out in Greater Jakarta, especially addressing millennials and also all Indonesian people who domicile specifically in Greater Jakarta. The time measurement and data retrieval were carried out from July 2021 - Feb 2022. This paper segment of the dissertation was targeted to be completed no later

than December 2022. The design (research plan) uses a qualitative and quantitative (mixed method) combined approach. The use of the Fuzzy AHP method can be maximized to analyze the design of a stock selection model in forming an optimal portfolio in the Indonesian capital market.

Data used in this research is in the form of primary data and secondary data. Primary data is obtained through survey questionnaires and discussions. Whereas secondary data is market data, stock price movement data sourced from the Indonesian Stock Exchange, Central Custodian Securities Indonesia, and Bank Indonesia, as well as empirical literature on optimal stock portfolio selection model.

The analysis method used to design the stock selection model in establishing an optimal portfolio is the Fuzzy AHP method. The Fuzzy Analytical Hierarchy Process or FAHP method is an analytical method developed from the usual AHP method or ordinary AHP. In general, humans have difficulties in producing quantitative estimations, and the ambiguity of choice decisions leads to inconsistencies in setting decisions (Elveny and Rahmadsyah, 2014). Traditional AHP still cannot represent human judgment. To avoid this risk, fuzzy AHP was developed to solve the problem of fuzzy hierarchy (Elveny and Rahmadsyah, 2014). As a decision-making tool, the fuzzy goal programming (FGP) model is fundamentally based on the multi-objective linear programming (MOLP) paradigm. The steps of FAHP used in this research are explained in Figure 1.

The development method of AHP uses fuzzy comparisons to analyze variables consisting of sub-variables. FAHP with the scrapping method is manipulated. FAHP is a combination of the AHP method with the fuzzy concept approach (Rahardjo et al. 2002).

FAHP covers the weaknesses that exist in AHP, which are problems with criteria that contain more subjective properties. Uncertainty of numbers is presented in scale order such as in Table 1.

The fuzzy-AHP method facilitates the development of decision-making preferences for fuzzy objectives. To apply the created model to the researched problems and provide them as fuzzy logic transformation numbers.

RESULTS

AHP analysis is manipulated to select the best alternative strategy for establishing an optimal portfolio in the Indonesian capital market. Filling the Fuzzy AHP questionnaire involved 7 (seven) experts who are competent in the Indonesian stock market. Experts have experience in the stock market of at least 10 years, hence, there is great accuracy in determining an optimal portfolio in the Indonesian capital market. The AHP framework consists of five levels which are the main focus/goal, factors that can influence alternative strategies, involved actors, implicit goals to be achieved from the strategy, and alternative key strategies to be applied to achieve an optimal portfolio in the Indonesian capital market (Figure 2).

The F-AHP results show that the priority of the main alternative strategy in forming an optimal portfolio in the Indonesian capital market is to predict prices or return of stocks by using one factor as a predictor that is considered to be influential on security weighing 0.440 (44%). The price of stock prices is influenced by many factors such as macroeconomic situations, large social and economic event market conditions, investor preferences, and company managerial decisions (Ji et al. 2021). Hence, investors must have the ability to select the right factors or predictors either manually, or even with the help of current technology such as econometric models or machine learning. According to Le and Xie (2018), it is difficult for the econometric model to consider the impact of other factors on stock

price fluctuations as they have strong assumptions about data, which are often difficult to fulfill. But Ji et al. (2021) show that the deep learning technology method that combines text feature information can better predict stock prices. The significance of stock price forecasting, given that an inaccuracy in anticipating the direction of a trend can result in financial losses (Bastian et al. 2021).

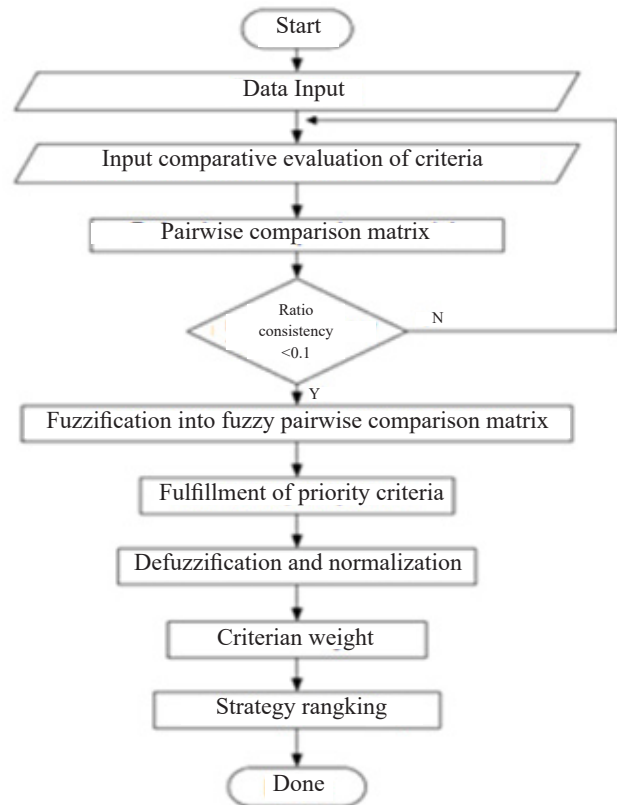


Figure 1. Steps of FAHP

Table 1. Fuzzy importance rate comparison scale

AHP Scale	Fuzzy Scale	Fuzzy Inverse Scale
1	1 = (1,1,1) = If diagonal (1,1,3) = Others	(1/3, 1/1, 1/1)
3	3 = (1,3,5)	(1/5, 1/3, 1/1)
5	5 = (3,5,7)	(1/7, 1/5, 1/3)
7	7 = (5,7,9)	(1/9, 1/7, 1,5)
9	9 = (7,9,9)	(1/9, 1/9, 1/7)
2	2 = (1,2,4)	(1/4, 1/2, 1/1)
4	4 = (2,4,6)	(1/6, 1/4, 1/2)
6	6 = (4,6,8)	(1/8, 1/6, 1/4)
8	8 = (6,8,9)	(1/9, 1/8, 1/6)

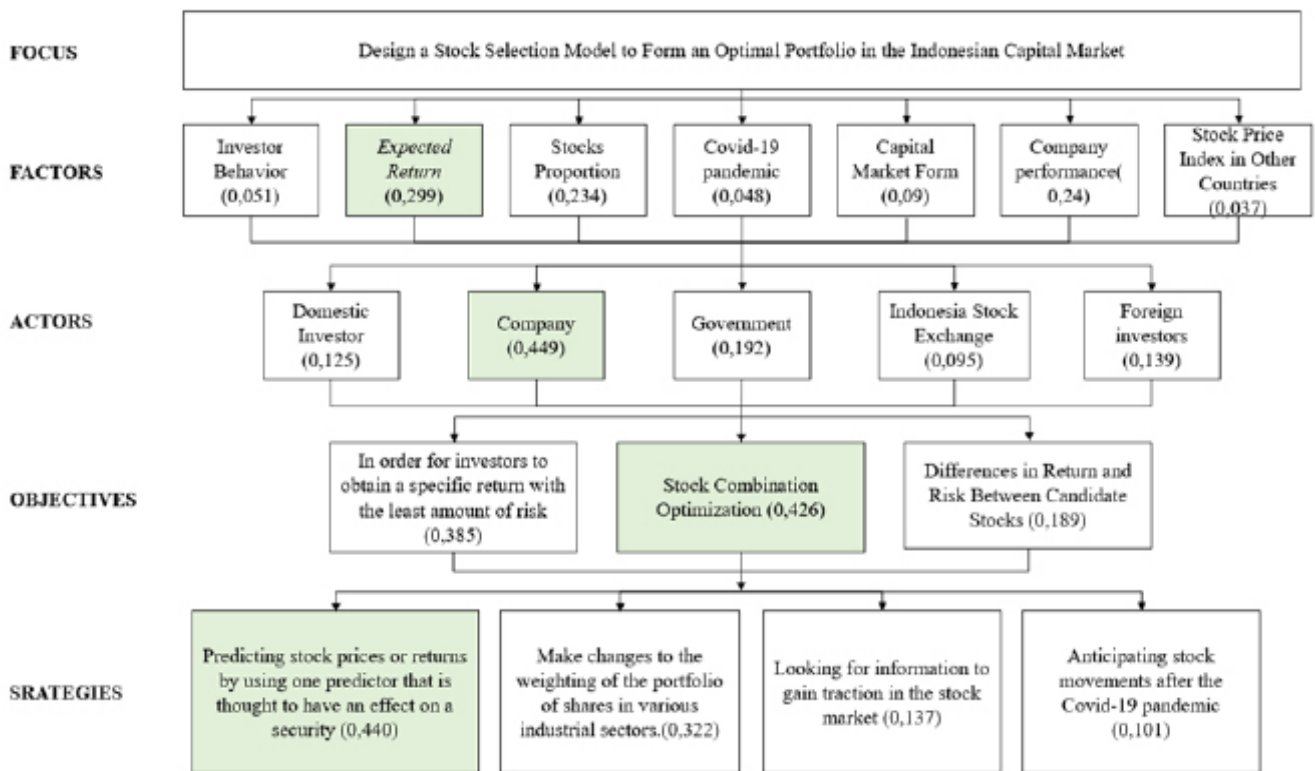


Figure 2. Stock selection model for portfolio formation on the Indonesian stock exchange

The second priority strategy that can be applied is to make modifications or changes to the weight of the stock portfolio in different industrial sectors with a weight of 0.322 to 32.2%. This is to be in a form of investment that has high and volatile risks. Accordingly, diversification is used to find the highest possible return for a certain level of investment risk in a portfolio. This is to Markowitz's theory (1952) which emphasizes efforts to maximize return expectations (mean) and minimize uncertainty or risk (variant) to select and compile an optimal portfolio. By adjusting the portfolio's weight, it is believed that it is capable to predict changes in the economic cycle, as well as the growth and value of the company's shares. Where investors will boost the proportion of unfavorable industrial sector stocks in their portfolios (Wibowo et al. 2019).

The third priority strategy is to perceive information to gain momentum in the stock market with a weight of 0.137 (13.7%). This information can be in the form of company financial statements, news, and utilizing macro-economic conditions such as conditions of war where the value of shares is falling and understanding sectors that have the potential to rise during whilst condition recovery process. This is due to the news article combining information about company fundamentals and activities in which companies are involved and

the expectations of other market participants about future price changes (Hagenau et al. 2013; Zhao et al. 2011). According to Selvi (2018), by paying attention to market conditions to gain momentum, a portfolio can have exceptional performance and be able to outperform the major indices. Because one of the fundamental concepts of investing is to continually evaluate potential hazards.

The fourth or final strategy is to anticipate the movement of stocks after the presence of the Covid-19 pandemic with a weight of 0.101 (10.1%). The current Covid-19 crisis has several socioeconomic influences that can be compared to those experienced during the 2008 economic and financial crisis. Governments around the world are making great efforts to maintain markets because there are signs that the health crisis will be followed by an economic crisis. Based on research conducted by Hatmanu and Cautisanu (2021) in Romania, there is a significant long-term negative impact of the pandemic on the BET index for Romania, while in the European economic context, it is said to receive a positive influence. According to Syarif et al. (2022), the release of Covid-19 did not significantly impact the majority of health sector issuers. However, investors are supposed to choose issuers or companies with a greater rate of return and lower risk to construct an ideal portfolio. This remark is backed by the

research of Krisna and Yunita (2022), who found that an efficient portfolio is not necessarily the optimal portfolio. An efficient portfolio can combine expected return and risk. When investors are confronted with numerous combinations of stocks in current portfolios, such that they must ultimately decide which portfolio to select (Supriyanti and Rahyuda, 2017).

The determination of strategies to form an optimal portfolio in the Indonesian capital market is bound by several direct factors that influence improving the performance of sharia banking, the factor having the greatest influence is the expected return which weights 0.299 (29.9%), the second factor is the performance of companies listed on the exchange with a weight of 0.24 (24%), the third factor is the weight/the proportion of each share weighing 0.234 (23.4%), while for the fourth factor is the form of capital market with a weight of 0.09 (9%), then the fifth factor is investor behavior with a weight of 0.051 or (5.1%), then the covid-19 pandemic with a weight of 0.048 (4.8%) and finally followed by the index of stock prices in other countries with 0.037 (3.7%). It appears that in setting strategies to improve the performance of sharia banking, the most important entity is the expected return that is demanded by investors. This means that investors must recognize the type of investment they want and adjust to the risks and returns expected.

Certainly, the main factor is strategies to form an optimal portfolio in the Indonesian capital market which is the expected return (0.299). On the capital market, stocks are an attractive investment opportunity

because they offer the chance of a significant return. Therefore, every investor attempts to forecast the expected return on the Indonesia Stock Exchange due to the unpredictability of the results (Zumara and Hartoyo, 2016). Therefore, the predicted return is the most important component that must be prioritized to construct an optimal portfolio.

This is followed by company performance factors (0.24), stock weight (0.234), investor behavior (0.051), Covid-19 pandemic (0.048), stock price index in other countries (0.0), company performance (0.24), as well as capital market forms (0.09).

The main actor with an important role in improving the performance of the optimal portfolio in the sequence is the company which has the highest weight of 0.449 (44.9%), then the Government with a weight of 0.192 (19.2%), in the third position are foreign investors weighing 0.139 (13.9%), domestic investors with 0.125 (12.5%), and finally the Indonesia Stock Exchange with 0.095 (9.5%)(Table 2). The corporation plays a crucial role in choosing the optimal stock portfolio. When an investor makes an investment and the company has a calamity that paralyzes the company's performance, this might affect the investor's capital loss (Rifaldy and Sedana, 2016). The company has a significant influence in determining whether or not the stock portfolio is appropriate. Where good working capital management is crucial for a company since it can reduce the company's reliance on trade debt, which will have a positive effect on investors in the future (Erdian et al. 2022).

Table 3. Relationship between factors against actor in designing stock selection model in establishing an optimal portfolio in Indonesia's capital market

Factor	Actor				
	Domestic Investor	Company	Government	Indonesia Stock Exchange	Foreign Investor
Investor Behavior	0.159	0.452	0.094	0.097	0.197
Expected Return	0.045	0.608	0.210	0.075	0.061
Weight / Proportion of Each Stock	0.055	0.600	0.182	0.105	0.059
Covid-19 Pandemic	0.082	0.339	0.452	0.071	0.056
Capital Market Form	0.204	0.467	0.098	0.105	0.127
Company Performance	0.067	0.616	0.205	0.052	0.060
Stock Price Index in Foreign Country	0.266	0.058	0.104	0.162	0.411
Average	0.125	0.449	0.192	0.095	0.139

In addition, there is an implicit main objective to be achieved from the strategy to form an optimal portfolio in the Indonesian capital market. It is to optimize the combating of stocks weighing 0.426 or 42.6%, for investors to earn a certain return with the smallest risk weighing 0.385 or 38.5%. Furthermore, the final goal to be achieved is the difference in return and risk between stock candidates' shares 0.189 or 18.9%. With an optimal combination of returns and risks, it indicates that investors are attempting to identify the stocks that comprise an effective portfolio (Silalahi et al. 2022).

Analysis of the relationship of factors to actors in the design of the Stock Selection Model shows that the results of the actor-level analysis are reviewed from investor behavior, expected return, weight/proportion of each share, a form of the capital market, and company performance shows that the main actors with the highest weight values in a row are companies (0.452) (0.608); (0.600); (0.467) (0.616). However, actor-level analysis reviewed from the Covid-19 pandemic shows that the main actor with the highest weight value is the government (0.452). Whereas the stock price index in other countries shows that the main actor is foreign investors (0.411)(Table 4).

Analysis of the actor's relationship to the objectives in designing the Stock Selection Model shows that the main objective is inspected by investors, the Indonesian Stock Exchange, and foreign investors with the highest weight values in a row, are optimizing the stock combination (0.593); (0.485). Whereas inspecting the company, the government shows that the main objective with the highest weight value in a row is for investors to get certain returns with the smallest risk (0.456); (0.452). Hence, on average, the main goal with the highest weight value is the optimization of stock combination (0.426).

Consequently, it may be inferred that each actor has distinct primary objectives based on their function in the ideal stock portfolio. Where domestic investors, foreign investors, and the Indonesia Stock Exchange have the primary objective of optimizing the combination of shares, as they provide funds to obtain an appropriate distribution of results so that the optimal combination of shares can benefit these parties. The primary objective of corporations and governments as policymakers is for investors to receive a specified return with the least amount of risk.

Based on the results (Table 5) of the objective relationship analysis against the strategy inspected from "For Investors

to Earn Certain Returns with the Slightest Risk" is to "Perform Modifications or Change Against stock Portfolio Weight at Different Industrial Sectors (0.403). The results of the strategy analysis inspected from the "Stock Combination Optimization" are Predicting Price or Stock Return by Manipulating One Factor as Predictor Assumed to be Affecting One's Security (0.432). The strategy analysis is inspected from the "Return and Risk Against Stock Candidate Difference" is "Predicting Price or Stock Return by Manipulating One Factor as Predictor Assumed to be Affecting One's Security" (0.686).

Consequently, it can be stated that each objective requires a completely different approach to attainment. A method of conducting adjustment or change versus stock portfolio weight in distinct industrial sectors is required for investors to reach their goal of earning specified returns with little risk. To achieve the objectives of stock combination optimization and the difference in return and risk between candidate stocks, it is important to employ a technique for projecting price or stock return by manipulating a component that is considered to be affecting one's security.

Managerial Implications

Investors are required to have a greater understanding of the investing behavior that will be executed, as well as the desired type of risk appetite, mental and financial abilities, and rational decisions, so that the ideal portfolio model may be selected. In addition, investors are obligated to consider sharia considerations if they are in a predominantly Muslim nation. Investors are required to forecast prices or stock returns using a single predictor; in this technique, investors will look for the correct momentum or time when the price of that predictor changes. Investors are supposed to forecast stock prices or returns using several predictors. In this situation, investors may select a stock portfolio by acting or purchasing shares. For regulators, before adopting a policy, use analytical mapping related to stock interest so that the projection of investor decision-making may be understood in the optimal portfolio model; additionally, regulators can be aware of investors in providing outreach and regulatory mapping. The managerial consequences for firm management include selecting an auditor based on their competency in dealing with hazards and their ability to interpret interest in buying shares under various conditions, such as how interested investors are in buying shares during the Covid-19 pandemic.

Table 4. Relationship between actor against purpose in designing stock selection model in establishing an optimal portfolio in indonesia’s capital market

Actor	Objectives		
	For investors to earn certain returns with slightest risk	Stock combination optimization	Return and risk against stock candidate difference
Domestic Investor	0.236	0.593	0.171
Company	0.456	0.193	0.352
Government	0.452	0.433	0.115
Indonesia Stock Exchange	0.419	0.485	0.096
Foreign Investor	0.362	0.426	0.212
Average	0.385	0.426	0.189

Table 5. Relationship between purpose against strategy in designing stock selection model in establishing an optimal portfolio in indonesia’s capital market

Objectives	Strategies			
	Predicting price or stock return by manipulating one factor as a predictor assumed to be affecting one’s security	Perform modification or change against stock portfolio weight in different industrial sectors	Searching for information to gain momentum in the stock market	Anticipate stock movement after the Covid-19 pandemic Hit
For investors to earn a certain return with the slightest risk	0.359	0.403	0.172	0.067
Stock combination optimization	0.432	0.343	0.093	0.132
The difference in return and risk between candidate stocks	0.686	0.057	0.122	0.135

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The importance of investment in a country's economic growth is to encourage investors to be able to choose the optimal portfolio model that is considered profitable. The decision-making process taken by investors is influenced by several factors which are ultimately linked to the stock selection model to form an optimal portfolio. Based on the results of the AHP analysis, an alternative priority strategy in forming an optimal portfolio in the Indonesian capital market is to “Predict Price or Stock Return by Manipulating One Factor as Predictor Assumed to be Affecting One’s Security”. Where by choosing the right prediction factor, the chosen stock selection model will be appropriate. The main factor that can support the stock selection model

is the expected return. The main actor, who plays an important role in forming the optimal portfolio, is the company. The implicit main objective to be achieved among the strategies to form an optimal portfolio in Indonesia's capital market is Stock Combination Optimization.

The aspiration is that investors can implement alternative strategies related to Predicting Price or Stock Return by Manipulating One Factor as Predictor Assumed to be Affecting One’s Security, Perform Modifications or Change Against Stock Portfolio Weight in Different Industrial Sectors, Searching for Information to Gain Momentum in the Stock Market, and Anticipate Stock Movements. Due to the risk trends of investors showing a large amount of investor interest in the investment risks it faces, this is to be very influential in determining the investment decisions taken.

Recommendations

The suggestion for upcoming research is to further expand the research objects in certain industries to compare optimal portfolio models to be visible in each industry.

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