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Optimizing invesment decisions: A comparative analysis of fundamental and technical approaches

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ABSTRACT

This study discusses the comparison between using technical analysis independently and combining fundamental analysis with technical analysis in optimizing stock investment decision-making. The data used is secondary data from LQ45 stocks during the period of February to July 2024. Technical analysis in this study uses the Stochastic RSI indicator, while fundamental analysis refers to the Price to Book Value (PBV) ratio. The results show using technical analysis has an accuracy rate of 92% with a profit of 16.224, which is higher than the combination of both analyses which recorded an accuracy of 87% and a profit of 5.999. Nevertheless, the combined strategy is proven to be more effective in reducing investment risk, making it still relevant for investors who focus on long-term security. This study is important because in investment practice, market participants often face confusion in choosing the most suitable analytical approach. By empirically comparing the two strategies, and this study provides insights that can help investors adjust their strategies based on their goals, risk tolerance, and investment horizon, so that the decisions made are more targeted and measurable.

1. Introduction

The main goal of investor is to maximize profits while minimizing risks. Therefore, every investor should have a solid investment plan to improve their chances of success in their investments (Dvir et al., 2003). To achieve this goal, investors need to apply various analysis methods as a foundation for their investment decision-making (Abbas et al., 2023). Generally, stock investors rely on both fundamental and technical analysis to make investment decisions in the stock market (Hoffmann & Shefrin, 2014). Market players need a method, adequate information, and responsive and relevant risk management instruments to manage market risks quickly and effectively (Banjo & Abere, 2023). In development economics, fundamental analysis is relevant for assessing the performance of the financial sector that drives economic growth. This approach helps measure the efficiency of resource allocation and the stability of strategic companies, which is crucial for long-term development (Yasmin & Sari, 2024).

However, the main challenge is the need for comprehensive data and in-depth analysis to link financial indicators with development goals (Afrianti et al., 2024). Therefore, investment decision-making within the framework of development economics is not only aimed at obtaining financial profit, but also considers its contribution to sustainable development, welfare distribution, and the resilience of priority sectors in the economy (Hasan & Purwanto, 2006). Fundamental analysis is considered the most effective approach to understanding a company's internal conditions through

ratios used to evaluate the financial performance of companies published for the benefit of investors (Contreras et al., 2012). The fundamental analysis method is more suitable for long-term stock investments (Pathade, 2017). The main advantage of fundamental analysis is that this approach takes into account the overall economic conditions from both macroeconomic and microeconomic perspectives (Baresa et al., 2013). However, this method has drawbacks as it requires significant time and resources to analyze various fundamental factors and does not provide specific information for determining buy and sell points in the stock market.

Technical analysis is an approach that focuses on historical market data, mainly prices and trading volumes, to predict future trends and provide information for making buy and sell decisions (Petrusheva & Jordanoski, 2016). Technical analysis utilizes various indicators like Moving Averages (MA), RSI, Stochastic, MACD, and several other indicators to identify patterns and buy or sell signals. The advantage of technical analysis is its ability to provide quick trading signals, which is very useful in investment decision-making in the highly volatile stock market (de Souza et al., 2018). However, the downside of technical analysis tends to be its focus on price and trading volume without considering fundamental factors, whether macro or microeconomic, of the company (Ritchie & Brindley, 2007). This can mean overlooking fundamental aspects behind it, such as financial health, management, and industry competition. Although these two methods have different approaches and objectives, each has its own strengths and weaknesses that can complement each other.

Combining technical and fundamental analysis can provide a more comprehensive picture of market conditions and asset values (Beyaz et al., 2018). By leveraging fundamental analysis to ensure asset quality and technical analysis to determine the right timing, investors can optimize their investment decisions in the stock market (Kamalasaravanan & Kumar, 2024). Nevertheless, many investors still rely on only one method without considering the potential benefits of using both approaches simultaneously. In the context of a highly dynamic financial market influenced by various external factors such as monetary policy, geopolitics, and global volatility, effective investment decision-making requires an adaptive and data-driven approach (Haidari, 2023). Therefore, the ability to integrate various sources of information and analytical perspectives is crucial in objectively assessing opportunities and risks, so that decisions made are not only reactive but also strategic and oriented towards long-term goals (Rascão, 2021).

Figure 1. Illustration of using one method and a combination of two methods.

Figure 1 shows without using technical analysis, the chances of making a profit are lower, even over a longer period. However, when combined with technical analysis, the profits increase. This indicates that by combining both types of analysis, you can achieve higher profits. Research conducted by Contreras et al (2012); Sulistio (2020); Tampubolon & Kusuma (2024) shows that using a combination of fundamental analysis and technical analysis is more effective, as demonstrated by optimizing trading systems that yield high returns. Petrusheva & Jordanoski (2016) indicates that combining both analyses allows them to complement each other and leverage the strengths and advantages of each analytical technique. However, this contrasts with the findings from Bettman et al (2009) which explains that using just one analytical technique actually performs better.

Various studies have been conducted regarding the use of fundamental analysis and technical analysis. However, research on the combination of fundamental and technical analysis is still very limited, even though the integration of these two approaches has great potential to produce more accurate and comprehensive investment decisions. Combining fundamental and technical analysis is important to bridge the gap between data-driven historical analysis and predicting future trends, which can improve the effectiveness of investment decision-making and contribute to economic

development, especially in the context of sustainable economic growth through optimizing investments in the stock market. Therefore, further research on this matter is both warranted and necessary. Consequently, this study aims to compare the profits and accuracy levels obtained from using technical analysis and its combination with fundamental analysis, as well as to identify effective strategies for optimizing profits when investing in the stock market.

2. Literature Review

2.1. Mean Reversion Theory

The theory of mean reversion is a concept stating that asset prices tend to return to their long-term average value after experiencing extreme fluctuations. This theory is widely used in investment and trading strategies to identify optimal buy and sell points. Long-term stock price movements often revert to their historical average, indicating a pattern of mean reversion in financial markets (Balvers et al., 2000). The mean reversion theory is more dominant in large-cap stocks, suggesting that market efficiency is not always perfect (Goudarzi, 2013). However, to improve analysis accuracy, a combination of fundamental and technical analysis is more effective. Fundamental analysis helps assess whether an asset is undervalued or overvalued based on economic factors and company performance, while technical analysis provides signals regarding the right time to determine buy and sell (Petrusheva & Jordanoski, 2016). The integration of these two analytical approaches allows investors to make more rational, data-driven investment decisions that are aligned with macroeconomic conditions and market movement direction, thereby increasing the chances of investment success in the long term.

2.2. Fundamental Analysis

Fundamental Analysis includes financial elements like income, expenses, assets, liabilities, and other financial aspects (Benton, 2002). This makes valuation using fundamental analysis on companies known as the process of determining intrinsic value or economic value. This value can help assess whether a stock's price is undervalued or overvalued (Zhang, 2005). The type of analysis that corresponds to stock prices is fundamental analysis, which takes into account both the current and future risks and prices of a stock (Eriandani et al., 2019). Fundamental analysis is essential for evaluating risks and profits in the form of dividends or capital gains (Darsono et al., 2025). However, it takes a significant amount of time to provide specific information regarding buy and sell points, and the returns generated may not be very favorable if only using fundamental analysis, even over a longer timeframe (Abarbanell & Bushee, 1997).

2.3. Price to Book Value (PBV)

Price to Book Value (PBV) serves as a guide for investors when choosing stock prices because it shows the comparison between the stock price and its book value, highlighting any discrepancies in a stock's price (Mutiarani et al., 2019). If the PBV is low, it indicates that the stock is cheap; however, if the stock is below its book value, the tendency is that the stock will at least match its book value (Burgstahler & Dichev, 1998). This situation gives the stock a significant potential to rise and can provide high returns (Syahputra & Idawati, 2024). In general, stocks with a PBV value above 1 are considered expensive, as this reflects that the stock price exceeds the company's book value. Conversely, stocks with a PBV value of less than 1 are often considered cheap and are therefore highly sought after by investors.

Table 1. Investment decision-making procedures based on the Price to Book Value (PBV) approach

Description	Stock Condition	Invesment Decision
PBV > 1	Overvalued	Sell Stocks
PBV = 1	Fairvalued	Hold Stocks
PBV < 1	Undervalued	Buy Stocks

Source: Husnan (2015)

Table 1 shows the investment decisions made by investors using the PBV theory. The main advantage of the PBV approach is can help investors assess whether a stock is undervalued (its price is below its intrinsic value) or overvalued (its price is above its intrinsic value) and provide an overview of the value of a company's assets in relation to its share price. The PBV approach also has weaknesses, such as being less relevant for companies with large intangible assets or different

industries, not taking into account the company's future growth potential, and not directly taking into account to the company's debt.

2.4. Stochastic RSI

The Stochastic RSI indicator is a development of the RSI (Relative Strength Index) indicator used to determine whether an asset is overbought or oversold (Rosillo et al., 2013). The Stochastic RSI measures the RSI value relative to its highest range over a certain period, making it more sensitive to price movements compared to the standard RSI (Rahmadani et al., 2024). This indicator is useful for predicting trend reversals as it can detect buy and sell signals more quickly (Sami et al., 2022). With its ability to identify price reversal moments early, Stochastic RSI becomes an important tool in investment decision-making, especially for investors who rely on short-term or trading strategies, as it can help determine market entry and exit times more precisely and measurably (Chou, 2023).

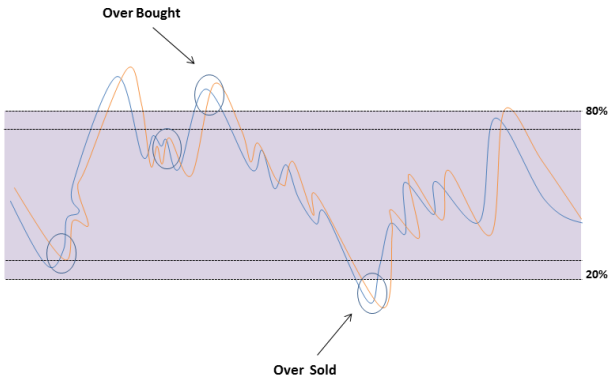


Figure 2. Invesment Decision using Stochastic RSI approach

Figure 2 shows the Stochastic RSI moves in the overbought zone above 80% and the oversold zone below 20%. A buy signal appears when the indicator rises from the oversold area, while a sell signal occurs when the indicator falls from the overbought area (Irahadi et al., 2022).

3. Method

This study used a comparative quantitative method to compare and combine fundamental and technical analysis in optimizing investment decisions. The study was conducted over 6 months (February–July 2024) using secondary data in the form of financial reports from idx.co.id and Stochastic RSI data with stock prices taken from closing prices obtained using the Profit Anywhere application. The research population consists of LQ45 stocks, which includes 45 companies during this period, with the sample consisting of the entire population (saturated sample). The LQ45 index was chosen because it has high liquidity and quality fundamentals (Irahadi et al., 2022). Data was collected through documentation techniques, covering stock prices, the number of shares outstanding, and buy and sell points using the Stochastic RSI indicator. The comparative quantitative method was chosen because it can provide an objective and measurable picture of the performance differences between analysis approaches, and allows researchers to test the effectiveness of investment strategies based on actual empirical data relevant to market conditions (Faruk & Rashid, 2024).

Data analysis divided into a). Data analysis using only technical methods, specifically the Stochastic RSI indicator with a Length Setting used over 14 days, to determine buy and sell points for entry and exit signals, as well as to calculate the profit earned; b). Data analysis by combining two methods: fundamental analysis and technical analysis to determine buy and sell points. This part starts with fundamental analysis of companies that have a low value (below < 1), followed by technical analysis using the Stochastic RSI indicator; and c). After obtaining profit results from each part, the next step is to compare the profits from each method, specifically the profit from the technical analysis method and the profit from the combined method of fundamental and technical analysis.

4. Results and Discussion

This study used technical analysis with the Stochastic RSI indicator. Meanwhile, the combination of fundamental and technical analysis uses the Price to Book Value (PBV) indicator. In technical

analysis the indicator used is the Stochastic RSI to determine predicted buy and sell points based on the momentum of stock price movements. This study shows that using technical analysis can identify profitable short-term trading opportunities. However, market volatility makes technical analysis more effective in short-term trading compared to long-term investing (Santoso, 2023).

Table 2. Calculations of Technical Analysis

Description	Technical Approach	Combination
Total Signals	88	83
True Signals	81	27
False Signals	7	4
Success Rate of Signals	92%	87%
Total Profit/Loss	16.224	5.999
Stock with Most Signals	INDF	INDF
Number of Signals	4	4
Stock with Fewest Signals	AKRA, ASII, BBCA, BBNI, BBRI, BRIS, BRPT, ESSA, GGRM, GOTO, MTEL, PTMP, SIDO	ANTM, ASII, GGRM, ITMG, UNTR
Number of Signals	1	1

Source: data processed

Table 2 shows the total number of signals generated using only technical analysis is 88 signals, of which 81 were successful and 7 were incorrect, resulting in a success rate of 92%. Meanwhile, the total profit/loss generated using only technical analysis is 16.224. The stock that showed the most signals from the use of technical analysis is INDF, with 4 signals, while the stocks with the least signals are AKRA, ASII, BBCA, BBNI, BBRI, BRIS, BRPT, ESSA, GGRM, GOTO, MTEL, PTPM, SIDO, each with 1 signal.

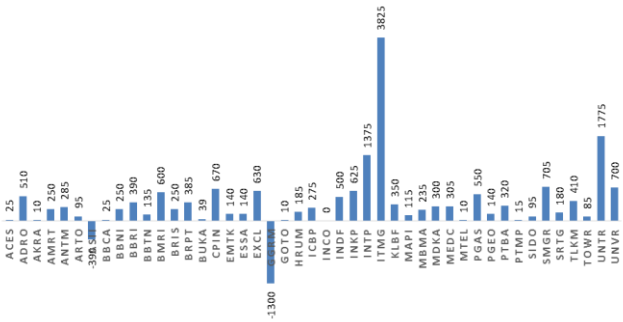
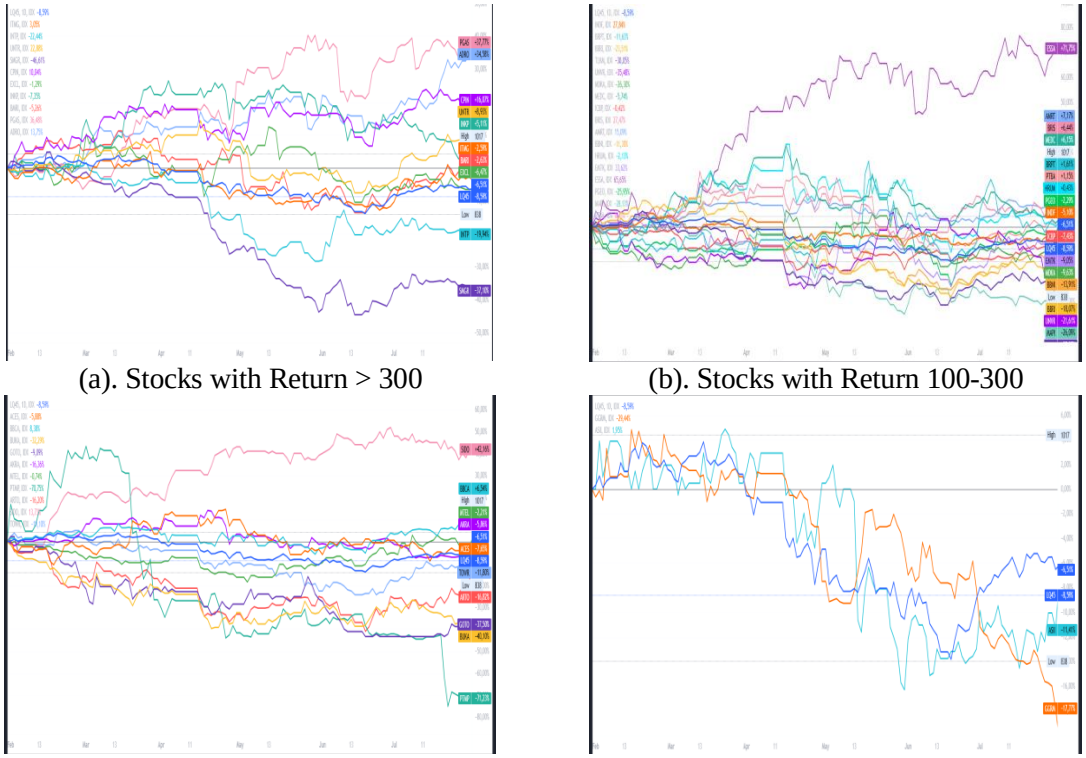


Figure 3. Return Generated by the Stochastic RSI Indicator

Figure 3 shows the stock returns obtained through technical analysis on 45 companies analyzed, where only 2 companies ended up with losses while the rest managed to record profits. The maximum profit generated using technical analysis was seen in ITMG's stock, with a profit value of 3,825. On the other hand, the minimum profit from technical analysis was noted in GGRM's stock, with a profit value of -1,300. Figure 4 shows the stochastic RSI approach for each return and Figure 4(a) shows that returns > 300 tend to have a strong trend, whether in an uptrend or downtrend. The use of Stochastic RSI plays a crucial role in this analysis, where the RSI indicator is used to identify trend strength while the Stochastic indicator is used to determine buy and sell points. The combination of these two technical analysis indicators allows for more accurate decision-making when capitalizing on strong trends (Galloppo, 2009). Figure 4(b) shows with returns between 100-300, tend to have stable price movements. This condition reflects that using StochasticRSI is quite effective in helping traders see price movement momentum that isn't too volatile, allowing for minimized risks while still taking advantage of profit opportunities (Chiang et al., 2012).

Stocks with low gains are shown in Figure 4(c), which have a return of 0-100, leaning towards stocks that don't have a clear trend or are in a sideways condition. The use of technical analysis, especially stochastic RSI, becomes less effective when the market is flat because the signals generated tend to be inaccurate (Dzikevičius & Saranda, 2010). This limits profit opportunities and increases the

risk of making wrong decisions. Meanwhile, the stocks experiencing losses shown in Figure 4(d) tend to be in a downtrend. In such situations, technical analysis using the stochastic RSI indicator is also less advisable because the signals often don't align with the direction of the increasingly weakening price movement. Therefore, traders are generally advised to avoid using technical analysis when the market is in a bearish condition (Lin et al., 2011).



(a). Stocks with Return > 300 (b). Stocks with Return 100-300

(c). Stocks with Return 0-100 (d). Stocks that Experienced Losses

Figure 4. Analysis of Stochastic RSI Approach for Each Return

The use of technical analysis with the Stochastic RSI indicator has proven to be more effective when applied to stocks that have strong trends (Huy & Cuong, 2018). By understanding patterns like these, traders are expected to make smarter choices in selecting strategies that are suitable based on market conditions and stock price movements. The combination of using RSI and Stochastic is very helpful, but its effectiveness still depends on the market context being faced. This aligns with research conducted by Bettman et al (2009) which explains that using one analysis technique can actually be more beneficial than combining two analysis techniques. This is because the use of technical analysis, namely Stochastic RSI, already includes a combination and yields more profits (Teixeira & de Oliveira, 2010). However, the fact is that both analyses have their strengths and weaknesses that can provide optimal results (Fagard et al., 1996).

The combination of fundamental and technical analysis does not yield a higher profit compared to using either method alone. This is due to technical signals sometimes conflicting with fundamental understanding, or technical timing not always aligning with fundamental growth potential (Sharma & Sharma, 2009). In the context of economic development, these findings suggest that the effectiveness of investment strategies that support sustainable economic development requires a more integrated approach, taking into account macroeconomic factors and market stability to encourage more efficient and positively impactful investment growth. Table 2 shows by combining fundamental and technical analysis, a total of 31 signals were generated, of which 27 were successful and 4 were incorrect, resulting in a success rate of 87%. Meanwhile, the total profit/loss from combining fundamental and technical analysis amounted to 5,999. The stock that generated the most signals was INDF with 4 signals, while the stocks with the fewest signals were ANTM, ASII, GGRM, ITMG, and UNTR, each with just 1 signal.

The maximum profit generated from the combination of fundamental and technical analysis was from ITMG, which offered the highest potential profit in this analysis. On the other hand, the minimum profit from the combination of the two analysis techniques came from GGRM, with a profit value of -1,300. Figure 5 shows stocks analyzed through fundamental analysis tend to have clear

trends or remain stable, resulting in lower risk. A combination of fundamental and technical analysis is more beneficial for reducing risk by confirming signals (Wang et al., 2014). Therefore, using a mix of technical and fundamental analysis is better suited for long-term investments, where fundamental analysis helps identify assets with growth potential, and technical analysis assists in determining the optimal buy/sell points. This does not align with the Darvas box theory developed by Nicolas Darvas in the 1950s, which explains that combining fundamental analysis and technical analysis leads to better profits (Sulistio, 2020). This is because the box theory is more effectively applied to growing industries with strong fundamentals that influence investors and consumers (Lee et al., 2016).

Figure 5. Stocks with a Combination of Fundamental and Technical Analysis

The results of this study contrast with the findings from Contreras et al (2012) that looked into investor decisions for equity traders, suggesting that combining two methods—fundamental analysis and technical analysis—leads to better investment decisions. This is because fundamental analysis and technical analysis are essentially different strategies (Menkhoff, 2010). Therefore, although the combination of fundamental and technical analysis has proven to be more effective in some cases, it should still be used with caution. Investors need to consider risk factors, market dynamics, and the specific conditions of each stock before making investment decisions (Raut, 2020).

Technical analysis and a combination of fundamental and technical analysis have a good accuracy level. This is evidenced by the number of successful signals and the total profits generated. With a success rate of 92%, the total profit amounts to 16,224, whereas combining fundamental and technical analysis yields a profit of 5,999 with a success rate of 87%. Technical analysis is more recommended for traders with a high-risk tolerance because the chosen stocks tend to vary across upward trends, sideways trends, and downward trends. On the other hand, the combination of fundamental and technical analysis is better suited for investors seeking stability, as the selected stocks tend to exhibit stable patterns. The principle of high risk, high return applies to technical analysis, where a high risk level aligns with significant profit potential (Bhama, 2024). Therefore, this method can be a superior choice for traders looking for a high profitability strategy based on technical signals (Lento & Gradojevic, 2007). However, the choice of strategy should be aligned with each trader's risk profile and investment goals.

Recommendations for investors to maximize investment decisions through technical analysis can utilize a combination of indicators like the Stochastic Oscillator and the Relative Strength Index (RSI), which are deemed more accurate (Chong & Ng, 2008). The Stochastic Oscillator is useful for determining buy and sell points, while the RSI helps measure trend strength and the potential for reversals. By combining these two indicators, investors can get a more accurate picture of stock price movements, aiding them in their decision-making. On the other hand, conservative investors or those looking to avoid high risks might consider a blend of fundamental and technical analysis, which tends to yield stable stocks with clear trends. Fundamental analysis focuses on a company's financial performance, business stability, and long-term prospects (Zulkifli, 2023). Stocks that demonstrate stable performance and clear technical trends can help investors reduce risks while maintaining profit potential. Investors can adjust their strategies based on their risk profile and financial goals, whether for short-term or long-term investments (Maretha et al., 2019).

In the context of financial markets, investment decision-making is not only influenced by company information alone, but also by macroeconomic dynamics such as inflation, interest rates, exchange rates, and economic growth (Haidari, 2023). These factors can affect risk perception and potential returns, making them important considerations in determining asset allocation strategies. Therefore, investors need to consider overall economic conditions in selecting instruments and sectors that align

with market trends. Integrating macroeconomic analysis with analytical approaches such as technical and fundamental analysis will result in more rational, contextual, and sustainability-oriented investment decisions (Darsono et al., 2025). Broadly within the economic framework, individual and institutional investment decisions in financial markets play a significant role in driving resource allocation efficiency. Careful and information-based investments can channel funds into productive sectors, strengthen the economic structure, and enhance long-term growth. Therefore, sound investment decision-making not only impacts investor profits but also contributes to the stability and development of the national financial system. This reinforces the urgency of understanding analytical instruments and their connection to economic conditions in formulating optimal investment strategies.

5. Conclusion

Technical analysis skills are used to examine historical market data in the form of prices and transaction volumes to predict future trends in determining buy and sell points that yield more significant profits, indicated by an accuracy rate of 92% and a total profit of 16.224, compared to a combination of fundamental and technical analysis. This indicates that technical analysis is more effective for short-term decision-making in a volatile stock market. The combination of fundamental analysis and technical analysis results in a lower profit of 5.999 with an accuracy rate of 87%. This indicates that this combination is more beneficial for reducing risk, even if it doesn't always yield high profits. Nonetheless, both fundamental analysis and technical analysis each have their strengths and weaknesses, so their use can be tailored to the goals and preferences of investors. The combination of these two analytical techniques remains relevant, particularly in specific contexts, especially for reducing risk and enhancing confidence in investment decision-making in the stock market.

The limitations of this study include several aspects: 1) the study only uses secondary data from financial reports on idx.co.id and technical indicator data (Stochastic RSI) over a period of 6 months (February-July 2024), which restricts the generalizability of the research findings because long-term data or data beyond this period has not been analyzed. 2) the research only uses the Stochastic RSI indicator as a representation and does not incorporate other technical indicators, such as MACD, Parabolic SAR, and Bollinger Bands, to provide a broader perspective on the effectiveness of technical analysis in combination. 3) the research solely relies on the PBV value as a parameter for fundamental analysis and technical analysis without exploring other fundamental variables like EPS, ROA, and ROE, thus making it unclear which methods are appropriate for achieving the expected profits.

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References

Abarbanell, J. S., & Bushee, B. J. (1997). *Abnormal returns to a fundamental analysis strategy*. Springer. doi: 10.2139/ssrn.40740

Abbas, A., Triani, N., Rayyani, W. O., & Muchran, M. (2023). Earnings growth, marketability and the role of Islamic financial literacy and inclusion in Indonesia. *Journal of Islamic Accounting and Business*, *14*(7), 1088–1105. doi: 10.1108/JIABR-12-2021-0322

Afrianti, N. L., Syafitri, Anisa, M., & Bintang, K. I. (2024). Analysis of human capital for

infrastructure development relation to industrialization in Indonesia. *Optimum: Jurnal Ekonomi Dan Pembangunan*, *14*(2), 177–188. doi: 10.12928/optimum.v14i2.9758

Balvers, R., Wu, Y., & Gilliland, E. (2000). Mean reversion across national stock markets and parametric contrarian invesment strategies. *The Journal of Finance*, *55*(2), 745–772. doi: 10.1111/0022-1082.00225

Banjo, A. K., & Abere, O. J. (2023). Measurement models for market risk management in Nigeria. *BOHR Journal of Financial Market and Corporate Finance (BJFMCF)*, *1*(2), 45–55. doi: 10.54646/bjfmcf.2023.09

Baresa, S., Bogdan, S., & Ivanovic, Z. (2013). Strategy of stock valuation by fundamental analysis. *UTMS Journal of Economics*, *4*(1), 45–51.

Benton, D. (2002). *Financial Management*. Nursing Standard. doi: 10.7748/ns2002.07.16.43.29.b366

Bettman, J. L., Sault, S. J., & Schultz, E. L. (2009). Fundamental and technical analysis: substitutes or complements? *Accounting & Finance*, *49*(1), 21–36. doi: 10.1111/j.1467-629X.2008.00277.x

Beyaz, E., Tekiner, X., Zeng, & Keane, J. (2018). Comparing technical and fundamental indicators in stock price forecasting. *2018 IEEE 20th International Conference on High Performance Computing and Communications; IEEE 16th International Conference on Smart City; IEEE 4th International Conference on Data Science and Systems (HPCC/SmartCity/DSS)*, 1607–1613. doi: 10.1109/HPCC/SmartCity/DSS.2018.00262

Bhama, V. (2024). Does an increase in portfolio volatility create more returns? Evidence from India. *Invesment Management and Financial Innovations*, *21*(2), 345–354. doi: 10.21511/imfi.21(2).2024.28

Burgstahler, D., & Dichev, I. D. (1998). *Earnings, adaptation, and equity value*.

Chiang, Y.-C., Ke, M.-C., Liao, T. L., & Wang, C.-D. (2012). Are technical trading strategies still profitable? Evidence from the Taiwan Stock Index Futures Market. *Applied Financial Economics*, *22*(12), 955–965. doi: 10.1080/09603107.2011.631893

Chong, T. T.-L., & Ng, W.-K. (2008). Technical analysis and the London stock exchange: testing the MACD and RSI rules using the FT30. *Applied Economics Letters*, *15*(14), 1111–1114. doi: 10.1080/13504850600993598

Chou, H.-M. (2023). Using bull and bear index of deep learning to improve the indicator model on extremely short-term futures trading. *Advances in Management & Applied Economics*, *13*(6), 121–133. doi: 10.47260/amae/1366

Contreras, I., Hidalgo, J. I., & Núñez-Letamendia, L. (2012). A GA combining technical and fundamental analysis for trading the stock market. *Applications of Evolutionary Computation*. doi: 10.1007/978-3-642-29178-4_18

Darsono, S. N. A. C., Bi, C., Mutiara, I., Kurniawan, M. L. A., Van Pho, T., & Nguyen, T. T. H. (2025). Drivers of China green bonds: An ARDL analysis of economic policy uncertainty, financial market volatility, exchange rates, and commodity prices. *International Journal of Energy Economics and Policy (IJEEP)*, *15*(4), 178–188. doi: 10.32479/ijeep.19188

de Souza, M. J. S., Ramos, D. G. F., Pena, M. G., Sobreiro, V. A., & Kimura, H. (2018). Examination of the profitability of technical analysis based on moving average strategies in BRICS. *Financial Innovation*, *4*(3). doi: 10.1186/s40854-018-0087-z

Dvir, D., Raz, T., & Shenhar, A. J. (2003). An empirical analysis of the relationship between project planning and project success. *International Journal of Project Management*, *21*(2), 89–95. doi: 10.1016/S0263-7863(02)00012-1

Dzikevičius, A., & Saranda, S. (2010). The accuracy of simple trading rules in stock markets. *Economics and Management*, *15*.

Eriandani, R., Narsa, I. M., & Irwanto, A. (2019). Pengaruh pengungkapan risiko lingkungan terhadap likuiditas dan biaya modal saham. *Jurnal Ekonomi Dan Bisnis*, *22*(2), 183–204. doi: 10.24914/jeb.v22i2.2356

Fagard, R. H., Staessen, J. A., & Thijs, L. (1996). Advantages and disadvantages of the meta-analysis approach. *Journal of Hypertension*, *14*, 9–13. doi: 10.1097/00004872-199609002-00004

Faruk, O., & Rashid, M. U. (2024). Comparative analysis of traditional and modern courtyards in Bengal. *Bhumi, The Planning Research Journal*, *11*(1), 1–35. doi: 10.4038/bhumi.v11i1.121

Galloppo, G. (2009). *Dynamic asset allocation using a combined criteria decision system*.

Goudarzi, H. (2013). Volatility mean reversion and stock market efficiency. *Asian Economic and Financial Review*, *3*(12), 1681–1692.

Haidari, M. N. (2023). Impact of decision-making on invesment performance: A comprehensive analysis. *Journal of Asian Development Studies*, *12*(4), 980–990. doi: 10.62345/jads.2023.12.4.78

Hasan, M. F., & Purwanto, D. A. (2006). Kebijakan investasi, mendorong pertumbuhan ekonomi yang adil dan berkelanjutan. *Jurnal Kebijakan Ekonomi*, *1*(3), 217–234.

Hoffmann, A. O. I., & Shefrin, H. (2014). Technical analysis and individual investors. *Journal of Economic Behavior & Organization*, *107*(Part B), 487–511. doi: 10.1016/j.jebo.2014.04.002

Husnan, S. (2015). *Dasar-Dasar Teori Portofolio dan Analisis Sekuritas*. UPP STIM YKPN.

Huy, T. P., & Cuong, N. T. (2018). Effectiveness of invesment strategies based on technical indicators: Evidence from Vietnamese Stock Markets. *Journal of Insurance and Financial Management*, *3*(5), 55–68.

Irahadi, D. R., Sianturi, M. S., & Kim, S. S. (2022). Penggunaan indikator analisa teknikal pada pasar saham di Indonesia. *Jurnal Ilmiah Manajemen Dan Inovasi Universitas Sam Ratulangi (JMBI UNSRAT)*, *9*(2), 808–827.

Kamalasaravanan, S., & Kumar, R. S. (2024). A study on fundamental and technical analysis of petrochemical industry in India. *International Advanced Research Journal in Science, Engineering and Technology*, *11*(6). doi: 10.17148/IARJSET.2024.11651

Lee, D. W., Shin, H.-H., & Stulz, R. M. (2016). *Why does capital no longer flow more to the industries with the best growth opportunities?* (Fisher College of Business Working Paper No. 2016-03-15; Charles A. Dice Center Working Paper No. 2016-15). doi: 10.3386/w22924

Lento, C., & Gradojevic, N. (2007). The profitability of technical trading rules: A combined signal approach. *Journal of Applied Business Research*, *23*(1). doi: 10.19030/jabr.v23i1.1405

Lin, X., Yang, Z., & Song, Y. (2011). Intelligent stock trading system based on improved technical analysis and Echo State Network. *Expert Systems with Applications*, *38*(9), 11347–11354. doi: 10.1016/j.eswa.2011.03.001

Maretha, E. L., Selvina, Y. E., & Trimeningrum, E. (2019). Penilaian kinerja perusahaan berbasis penciptaan nilai untuk strategi keuangan dan keputusan investasi. *Jurnal Ekonomi Dan Bisnis*, *22*(1), 23–44. doi: 10.24914/jeb.v22i1.2050

Menkhoff, L. (2010). The use of technical analysis by fund managers: International evidence. *Journal of Banking & Finance*, *34*(11), 2573–2586. doi: 10.1016/j.jbankfin.2010.04.014

Mutiarani, N. N., Dewi, R. R., & Suhendro. (2019). Pengaruh price earning ratio, price to book value, dan inflasi terhadap harga saham yang terindeks IDX 30. *EDUNOMIKA*, *3*(2). doi: 10.29040/jie.v3i02.639

Pathade, V. P. (2017). Equity research: Fundamental analysis for long term invesment. *International Journal of Applied Research*, *3*(4).

Petrusheva, N., & Jordanoski, I. (2016). Comparative analysis between the fundamental and technical analysis of stocks. *Journal of Process Management and New Technologies*, *4*(2), 26–31. doi: 10.5937/JPMNT1602026P

Rahmadani, N. A., Mira, & Nurlina. (2024). Kebangkrutan Silicon Valley Bank: Analisis return saham menggunakan indikator stochastic. *Jurnal Ilmiah Akuntansi Manajemen*, *7*(1), 106–114.

Rascão, J. (2021). The strategic decision making and sources of information. *American Journal of Humanities and Social Sciences Research (AJHSSR)*, *5*(1), 485–503.

Raut, R. K. (2020). Past behaviour, financial literacy and investment decision-making process of individual investors. *International Journal of Emerging Markets*, *15*(6), 1243–1263. doi: 10.1108/IJOEM-07-2018-0379

Ritchie, B., & Brindley, C. (2007). An emergent framework for supply chain risk management and performance measurement. *Journal of the Operational Research Society*, *58*(11), 1398–1411. doi: 10.1057/palgrave.jors.2602412

Rosillo, R., de la Fuente, D., & Brugos, J. A. L. (2013). Technical analysis and the Spanish stock exchange: testing the RSI, MACD, momentum and stochastic rules using Spanish market companies. *Applied Economics*, *45*(12), 1541–1550. doi: 10.1080/00036846.2011.631894

Sami, H. M., Ahshan, K. A., Rozario, P. N., & Ashrafi, N. (2022). Evaluating the prediction accuracy of MACD and RSI for different stocks in terms of standard market suggestions. *Canadian Journal of Business and Information Studies*, *4*(6), 137–143. doi: 10.34104/cjbis.022.01370143

Santoso, H. (2023). Analisis fundamental dan teknikal saham PT. Bank Syariah Indonesia Tbk. (BRIS). *JIEI (Jurnal Ilmiah Ekonomi Islam)*, *9*(1), 609–617.

Sharma, M., & Sharma, P. (2009). Prediction of stock returns for growth firms: A fundamental analysis. *Vision: The Journal of Business Perspective*, *13*(3). doi: 10.1177/097226290901300303

Sulistio, D. J. (2020). Kombinasi analisis fundamental dengan analisis teknikal dalam menghasilkan return saham. *Accounting and Business Information Systems Journal*, *8*(2), 1–16. doi: 10.22146/abis.v8i2.58893

Syahputra, R. R., & Idawati, W. (2024). Pengaruh price earnings ratio (PER), price to book value (PBV) dan inflasi terhadap harga saham perusahaan farmasi yang tercatat di BEI 2017-2021. *Journal of Accounting, Management, and Islamic Economics*, *2*(1). doi: 10.35384/jamie.v2i1.555

Tampubolon, M. V. R., & Kusuma, Y. B. (2024). Studi literatur kombinasi analisis fundamental dan teknikal sebagai strategi investasi saham yang efektif. *Jurnal Akuntan Publik*, *2*(1), 179–191. doi: 10.59581/jap-widyakarya.v2i1.2535

Teixeira, L. A., & de Oliveira, A. L. I. (2010). A method for automatic stock trading combining technical analysis and nearest neighbor classification. *Expert Systems with Applications*, *37*(10), 6885–6890. doi: 10.1016/j.eswa.2010.03.033

Wang, Y.-C., Yu, J., & Wen, S.-Y. (2014). Does fundamental and technical analysis reduce invesment risk for growth stock? An analysis of Taiwan Stock Market. *International Business Research*, *7*(11). doi: 10.5539/ibr.v7n11p24

Yasmin, & Sari, W. F. (2024). Analysis of the causality between economic growth and government spending: Wagner's law versus Keynes hypothesis. *Optimum: Jurnal Ekonomi Dan Pembangunan*, *14*(2), 151–158. doi: 10.12928/optimum.v14i2.8552

Zhang, H. (2005). Share price performance following actual share repurchases. *Journal of Banking*

& Finance, *29*(7), 1887–1901. doi: 10.1016/j.jbankfin.2004.06.038

Zulkifli. (2023). Investigation into the fundamental analysis of stock investment: Instruments on the Indonesian Stock Exchange. *Enigma in Economics*, *1*(1), 6–11. doi: 10.61996/economy.v1i1.7