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Analysis Of Stock And Mutual Fund Portfolio Performance Using Sharpe, Treynor, And Jensen Methods (10 Blue Chip Stocks and 5 Best Mutual Funds 2023)

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ABSTRACT

Analysis of Stock Portfolio Performance and Mutual Funds with the Sharpe, Treynor, and Jensen Index methods on the best blue chip stocks and mutual funds on the Indonesia Stock Exchange. The purpose of this study is to determine the optimal portfolio performance of a stock portfolio formed from the 10 best blue chip stocks and the 5 best mutual funds in 2023. Based on the results of the analysis, the stock portfolio formed from the 10 best blue chip stocks provides better portfolio performance than mutual funds. However, 2 portfolios formed from each of the 5 best stocks, give different results on the Sharpe Index and Treynor Index, compared to the Jensen Index Method. The stock portfolio formed from the 5 best stocks gives a result of 0.0931 on the Sharpe Index Method and 1.1673 on the Treynor Index method, which is the highest portfolio performance compared to other portfolios and mutual funds. However, the results are different in the calculation according to the Jansen Index method with the highest value of 2.4159 in the stock portfolio formed from the second 5 best stocks. The higher the Sharpe index value, the better the performance of the stock portfolio

Keywords: Stock Portfolio Performance, Mutual Funds, Sharpe Index, Trenor Index, Jensen Index.

1. Introduction

Investment activities aim to gain profits in the future, one form of investment is financial investment. Financial investment is a form of investment in securities in the form of written contracts, both long-term and short-term, in order to obtain capital gains, dividends or interest. Investment analysis often faces problems, namely the assessment of the risk faced by investors. Financial theory explains that if the investment risk increases, the level of profit required by investors is greater. To reduce investment losses/risks, investors can invest in various types of stocks by forming a portfolio (Fabbozi, 1999).

Portfolio can be defined as an investment in various financial instruments that can be traded on the Stock Exchange and Money Market with the aim of spreading the sources of return and

possible risks. The financial instruments in question include stocks, bonds, foreign exchange, deposits, stock price indices, and other derivative products (Samsul, 2006) . The positive relationship between return and risk in investing is known as high risk-high return, which means the greater the risk that must be borne, the greater the return generated. While portfolio risk consists of systematic and unsystematic risks. These two risks are often referred to as total risk (Jogiyanto, 2003) . The optimal portfolio is achieved by simulating several securities that are considered efficient using certain calculation procedures (Sartono, 1998) . To achieve high returns while managing risk can be done by identifying relevant stocks for efficient portfolio construction (Brito, 2023). To form one or several portfolios requires selected stocks that will be combined into the portfolio. The number of stocks selected to form a portfolio varies greatly, it depends on the investor's preference for the stock itself. n addition, investors should pay attention to momentum strategies. Momentum investment strategies gain significant profits on short-term horizons (six months) (Najmudin, 2009)

Measuring portfolio performance cannot only be seen from its return but also must consider the risk that will be borne by investors. There are 3 parameters that can be used to measure portfolio performance and mutual fund performance developed by William Sharpe, Jack Treynor, and Michael Jensen. These three performance measurements are called Sharpe performance measures, Treynor performance and Jensen performance. These three performance measurements assume a linear relationship between portfolio returns and returns from several market indexes. These three models base their analysis on past returns to predict future returns and risks (Samsul, 2006).

Portfolio and mutual fund management carried out by both investment managers and individual investors will be very important in evaluating the performance of previously prepared portfolios to determine the level of returns achieved. (Rachmawati et al., 2020) The investment strategy of the investment management team influences the performance of stock mutual funds compared to the characteristics of the investment manager with the proxy of length of service. This study aims to measure the performance of a stock portfolio formed from Blue Chip stocks and Mutual Funds using the Sharpe, Treynor and Jensen models. In addition, it is also intended to compare the performance of a stock portfolio formed from blue chip stocks with the performance of mutual funds using the Sharpe, Treynor and Jensen Models. The Jensen, Sharpe and Treynor methods differ significantly between the expected and generated returns due to differences in the variables used in the calculations, so it is necessary to standardize the performance measures used (Tuerah, 2013) . The results of the evaluation of the performance of sharia stock investments using the Sahrpe, Treynor and Jensen Indexes showed the same results (Yunita, 2023). There are several results of stock performance evaluation research which show that not all index performance is positive, but also negative and the results of the three methods show almost the same results (Priyanti et al., 2021; Yuri et al., 2022)

2. Literature Review

2.1 Investment in the form of shares

Investment can be interpreted as an activity of investing capital either directly or indirectly, with the hope that in time the capital owner will get some profit from the results of the investment (Mudasetia, 1995). Investment in a broad sense consists of two main parts, namely investment in the form of real assets and investment in the form of securities (marketable securities or financial assets).

Investment in the capital market can be in the form of shares or mutual funds. Investment in the form of shares as a short-term investment and long-term investment depending on the purpose of the purchase. Investment in the form of shares that are grouped as long-term investments are usually carried out for various purposes (Jones, 2000), namely (1) to supervise the company, (2) to obtain a fixed income each period, (3) to form a special fund, (4) to ensure continuity of supply of materials, (5) to maintain relations between subsidiaries. Investment in the capital market will provide various benefits for shareholders, including the possibility of obtaining capital gains, having priority rights to buy evidence of rights issued by the company, the possibility of obtaining rights to bonus shares, unlimited election time, and ending when reselling shares, and providing voting rights at the general meeting of shareholders.

2.2 Return, Risk and Portfolio

Return is a reward for the courage of investors to bear the risk of the investment made. Sources of investment returns consist of two main components, namely yield and capital gain. Yield is a return component that reflects the cash flow or income obtained periodically from an investment. While capital gain is an increase in the price of a security (stocks or long-term debt), which can provide benefits to investors. The sum of yield and capital gain is called the total return of an investment (Tandellin, 2001) . The return to be obtained can be seen based on financial performance and company size. (Setiyono, 2016) shows that Debt to Equity Ratio (DER) and Earning Per Share (EPS) have an effect on Stock Returns, but Current Ratio (CR) and Return On Asset (ROA) and Company size do not have enough effect.

Risk is the possibility of a difference between the received and expected returns. The risk of a stock portfolio depends on the proportion of individual stocks, variances, and covariances of those stocks. Changes in those variables will change the risk of the portfolio. Still related to that, it is a common truth that if stocks are selected randomly and combined into a portfolio, the portfolio risk will decrease according to the number of different stocks added (Statman, 1987). The basic purpose of a portfolio is to obtain an optimal allocation between different assets. A portfolio is defined as a series of combinations of several assets that will be invested and held by investors, both individuals and institutions. The combination can be real assets in the form of gold, silver, real assets or financial assets in the form of securities as proof of ownership of a company or stocks. In the capital market, a portfolio is associated with a financial asset portfolio, namely a combination of several stocks so that investors can achieve optimal returns and minimize risk (Sumariyah, 1997). The portfolio has good performance despite a fairly high level of risk (Priyanti et al., 2021).

2.3 Diversification

Diversification is the distribution of assets. Diversification should be increased as long as the marginal benefit exceeds the marginal cost. (Huang et al., 2024) states that the benefit of diversification is in reducing risk. While the cost is transaction costs. The difference of opinion to limit diversification is that marginal costs increase faster than the marginal benefit from increasing diversification. Furthermore (Sharpe, 1995) argues that diversification can reduce risk, especially non-market risk. Other researchers have also shown that proper diversification can improve portfolios and reduce risk (Aritonang et al., 2023; Ramadhan et al., 2020)

(Fabbozi, 1999) defines portfolio diversification as the formation of a portfolio in such a way that it can reduce portfolio risk without Unsystematic Risk Total Risk Systematic Risk Number of Stocks in Portfolio Portfolio Risk sacrificing the returns generated. Investors who specialize in one group of assets, such as stocks, also consider it necessary to diversify their portfolio. What is meant by portfolio diversification in this case is that all available funds should not be invested in the form of just one company's stock, but the portfolio must consist of stocks of many companies. A portfolio formed to avoid risk can be done by diversifying (Kiky et al., 2022)

2.4 Portfolio Performance Measurement

The development of the concept of portfolio performance measurement occurred in the late 60s, pioneered by Wiliam Sharpe, Trenor, and Michael Jensen. This concept is based on the Capital Market theory. These three measures are known as composite (risk-adjusted) measures of portfolio performance because they combine return and risk in one calculation (Jogiyanto, 2003). The three performance measures are as follows:

2.4.1 Sharpe Performance Measures

One of the methods used to compare portfolio performance is by using the concept of the Capital Market Line (CML) or better known as the Reward to Variability Ratio (RVAR). Where Sharpe states that the portfolio performance series is calculated as the net result of the portfolio with a risk-free interest rate per unit of risk with the symbol Sp. The Sharpe performance index is calculated using the following formula (Manurung, 2000):

$$Sharpe\ Index = \frac{r_p - r_f}{\sigma_p}$$

Where :

r_p = Portfolio return or market rate of return

r_f = Risk-free return or risk-free interest rate

σ_p = Total risk, which is the sum of systematic risk and unsystematic risk.

If the portfolio is highly diversified then the total risk is almost equal to the systematic risk because the unsystematic risk is close to zero. This can also be called if the portfolio is the same as the market portfolio then the total risk is equal to the systematic risk or market risk or can be called beta.

2.4.2 Treynor Performance Measures

Treynor as one of the indexes used to measure portfolio performance, Treynor assumes that the portfolio is highly diversified known as the Reward to Valatility Ratio (RVOR). Therefore, the Treynor index states that the portfolio performance series is calculated as the net result of the portfolio with the risk-free interest rate per unit of market risk of the portfolio with the symbol T p. The Treynor performance index is calculated using the following formula (Manurung, 2000):

$$Treynor\ Index = \frac{r_p - r_f}{\beta_p}$$

Where :

r_p = Portfolio return or market rate of return

r_f = Risk-free return or risk-free interest rate

β_p = Market risk of a portfolio or systematic risk of a portfolio

2.4.3 Jensen Performance Measures

As one of the portfolio performance measures, Jensen pays close attention to CAPM in measuring the portfolio performance which is often referred to as Jesen ALPHA (differential return measure). Jesen ALPHA is an absolute measure that estimates a constant rate of return during the investment period which obtains the Jesen ALPHA rate of return above (below) the buy-hold strategy with the same systematic risk. The Jensen ALPHA formula is as follows (Manurung, 2000):

$$Jansen\ Index = r_p - [r_f + \beta_p (r_m - r_f)]$$

r_p = Portfolio return or market rate of return

r_f = Risk-free return or risk-free interest rate

r_m = Total risk, which is the sum of systematic risk and unsystematic risk.

β_p = Market risk of a portfolio or systematic risk of a portfolio

The equation above shows that the portfolio risk premium is influenced by the market risk premium. The values of a and b in the equation above are estimated according to a model known as regression. Therefore, the original time series data of the portfolio, the market return rate and the risk-free interest rate must be available. The highest and most significant value of a is the best portfolio from the existing portfolios.

As for the framework of thought of this research, see Figure 1 framework of thought.

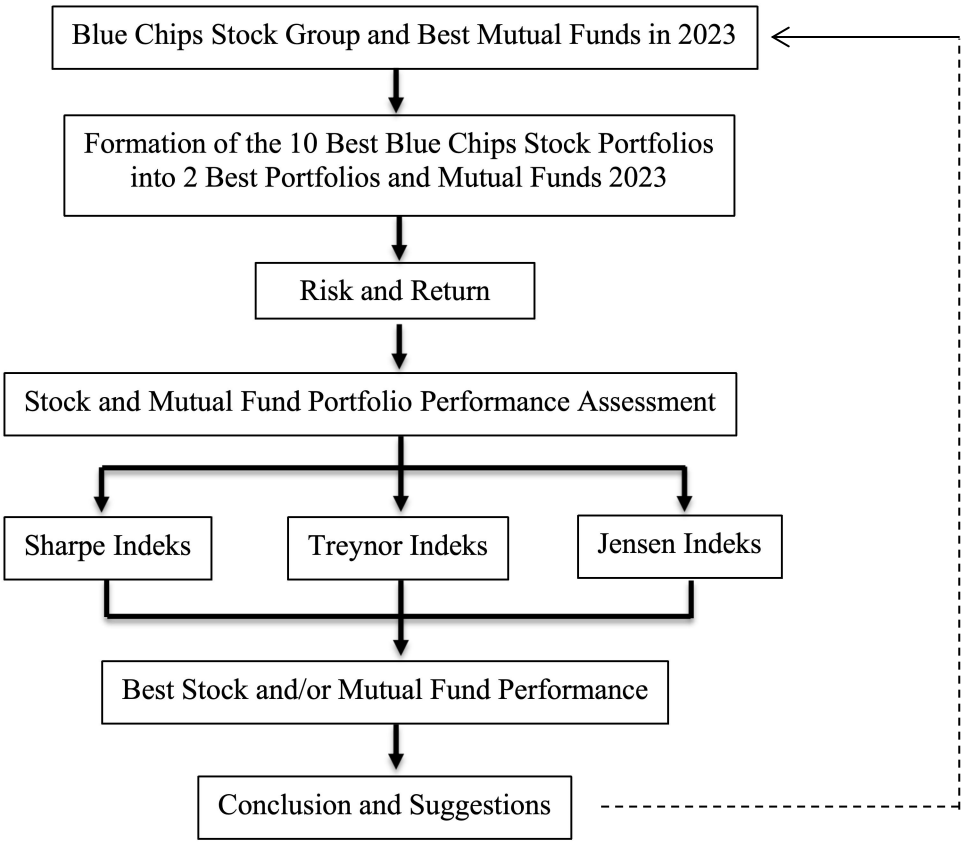

Figure 1. Framework of Mind

3. Research Methodology

3.1 Research Design

(Sugiyono, 2013) states that "population is a generalization area consisting of: objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn". The population in this study is the companies listed in the Blue Chip and Best Mutual Funds index in 2023.

(Sugiyono, 2013) states that "a sample is part of the number and characteristics possessed by the population". The sampling method used in this study is to use the purposive sampling method to obtain a representative sample according to the specified criteria. The sample criteria used in this study are companies listed on the best Blue Chips index in 2023 which are then made into 2 portfolios with the best order 1 to 5 being portfolio A and the best 6 to 10 being portfolio B. In addition, the sample is also from the 5 best mutual funds in 2023. The research period is the period 2014 to 2023. so that the sample in this study is 15 companies consisting of 10 Blue Chips indexed companies and 5 best mutual funds in 2023.

The data collection method in this study is the documentation method, which is a data collection method based on documents in the form of secondary data, either by library research or internet research. The data used in this study are company data listed in the Blue Chip index on the

Indonesia Stock Exchange (IDX), monthly closing stock prices, monthly Composite Stock Price Index (IHSG), and BI 7-Day Repo Rate interest rates obtained from the sites www.idx.co.id, www.idnfinancials.com, www.investing.com, www.ojk.go.id and www.bi.go.id.

Table.1 Sample List

No	Stock Code	Stock Name
1	Portfolio A	
	BBCA	Bank Central Asia
	TLKM	Telekomunikasi Indonesia Persero Tbk.
	ICBP	Indofood CBP Sukses Makmur TBK
	ASII	Astra International Tbk.
	UNTR	United Tractor Tbk.
2	Portfolio B	
	ANTM	Aneka Tambang TBK.
	GGRM	Gudang Garam TBK
	BBNI	Bank Negara Indonesia Tbk
	BBRI	Bank Rakyat Indonesia TBK
	UNVR	Unilever Indonesia
	Mutual Fund	
3	C	TRIM Kapital Plus
4	D	TRIM Kapital
5	E	Prospera Bijak
6	F	Syailendra Equity Opportunity Fund Kelas A
7	G	TRAM Consumption Plus Kelas A

3.2 Data Analysis Technique

The analysis method in this study is a quantitative descriptive method. Data analysis uses the Microsoft Office Excel 2010 application program to assess the performance of the stock portfolio using the Sharpe, Treynor, and Jensen index methods.

4. Results

4.1 Risk and Return of Stock Portfolio and Mutual Funds

The first step is to calculate the return consisting of stock returns, market returns, and risk-free returns. Stock returns are calculated using monthly closing stock price data (closing price) obtained from historical data at www.investing.com . NAV per unit of Mutual Fund is calculated using NAV data and the number of monthly participation units obtained from historical data at www.ojk.go.id Market returns are calculated using market price data, namely the monthly IHSG obtained from historical data at www.investing.com . Meanwhile, risk-free returns are calculated using SBI (Bank Indonesia Certificate) interest rate data, namely the BI-7 Day Repo Rate interest rate obtained at www.bi.go.id . The results of the calculation of Risk and return from each portfolio and mutual fund can be seen in tables 2

Table.2 Risk dan return

Year	A	B	C	D	E	F	G
2014							
2015	-0,0178	-0,1598	-0,2413	-0,1547	-0,1110	-0,1897	-0,1381
2016	0,2705	0,4380	0,1152	0,0763	0,1250	0,1357	0,1384
2017	0,2471	0,3602	0,1029	0,1569	0,1314	0,1991	0,2000
2018	-0,0061	-0,0143	0,0631	0,0367	0,0329	0,0438	0,0090
2019	0,0080	-0,0498	-0,0200	-0,0069	-0,0446	-0,0326	-0,0057
2020	-0,0378	0,1373	-0,0219	-0,0815	-0,1041	-0,0299	-0,0431
2021	-0,0028	-0,0856	0,1446	0,1247	0,0379	0,0072	0,0251
2022	0,0852	0,0365	0,0300	0,0397	-0,0075	-0,0046	-0,0188
2023	0,0138	-0,1039	0,1277	0,0938	0,0931	0,0646	0,0627
E(Ri)	6,22%	6,21%	3,33%	3,17%	1,70%	2,15%	2,55%
STDEV	11,65%	21,02%	11,99%	9,95%	9,13%	11,07%	9,95%
Variance	1,36%	4,42%	1,44%	0,99%	0,83%	1,23%	0,99%

4.2 Portfolio and Mutual Fund Performance

Tabel 3. Portfolio dam Mutual Fund Performance

Performance	Sharpe Index	Treynor Index	Jansen Index
Portofolio A	**0,0931**	**1,1673**	1,9809
Portofolio B	0,0509	0,7639	**2,4159**
Mutual Fund C	-0,1504	-1,8921	-0,8861
Mutual Fund D	-0,1981	-2,2053	-1,1113
Mutual Fund E	-0,3767	-4,2873	-2,6665
Mutual Fund F	-0,2700	-3,0519	-2,0458
Mutual Fund G	-0,2602	-2,7857	-1,6946

5. Discussion

Based on the calculation results, the following results were obtained:

5.1 Sharpe Index

The portfolio formed from the 5 best blue chip stocks of 2023 in order from 1 to 5 consisting of Bank Central Asia (BBCA), Telekomunikasi Indonesia Persero Tbk. (TLKM), Indofood CBP Sukses Makmur TBK (ICBP), Astra International Tbk. (ASII), United Tractor Tbk. (UNTR) provides the highest calculation results compared to others and has a positive value of 0.0931. This means that Portfolio A has the best performance compared to portfolio B and mutual funds.

5.2 Treynor Index

Similar to the Sharpe index, a portfolio formed from the 5 best blue chip stocks of 2023 in order from 1 to 5 consisting of Bank Central Asia (BBCA), Telekomunikasi Indonesia Persero Tbk.

(TLKM), Indofood CBP Sukses Makmur TBK (ICBP), Astra International Tbk. (ASII), United Tractor Tbk. (UNTR) also provides the highest calculation results compared to others according to the Treynot Index. This means that Portfolio A has better performance than Portfolio B and mutual funds, with a Treynor index value of 1.1673.

5.2 Jensen Index

In contrast to the share method and the treynor method, the calculation results of the Jensen method provide the highest results in Portfolio B, which is a portfolio formed from 5 of the 10 best blue chip stocks with the 6th to 10th best categories, consisting of Aneka Tambang TBK. (ANTM), Gudang Garam TBK (GGRM), Bank Negara Indonesia Tbk (BBNI), Bank Rakyat Indonesia TBK (BBRI), Unilever Indonesia (UNVR) with a Jensen Index value of 2.4159. This means that Portfolio B according to the Jensen Index has better performance than Portfolio A and Mutual Funds.

6. Conclusion

Based on the research results, the following conclusions can be drawn:

1. Sharpe Index and Treynor Index provide the best performance in Portfolio A, which is a portfolio formed from the 5 best blue chip stocks in 2013 consisting of Bank Central Asia (BBCA), Telekomunikasi Indonesia Persero Tbk. (TLKM), Indofood CBP Sukses Makmur TBK (ICBP), Astra International Tbk. (ASII), United Tractor Tbk. (UNTR);
2. Different results according to Jensen Index, namely Portfolio B shows the best performance, namely a portfolio formed from the 6th to 10th best blue chip stocks in 2023 consisting of Aneka Tambang TBK. (ANTM), Gudang Garam TBK (GGRM), Bank Negara Indonesia Tbk (BBNI), Bank Rakyat Indonesia TBK (BBRI), Unilever Indonesia (UNVR).
   The results of the study which show that performance calculations using the Sharpe Index and Treynor Index tend to be the same, while the Jensen Index gives different performance results, have also been presented by (Ella ., 2024)
3. The performance of the stock portfolio formed from the best Blue Chips stocks based on the Sharpe, Treynor and Jensen indices shows better results than the performance of mutual funds

The results of this study have implications for prospective investors in making stock investments should form a portfolio and assess the performance of the portfolio formed. This aims to reduce the investment risk that will be borne and is expected to be able to provide optimal returns. For further research, it is expected to increase the observation period and form an optimal stock portfolio first with CAPM calculations, the Markowitz Model, or other models and not only based on the best data provided by the market.

References

Aritonang, C., Munthe, G. R., Monalisa, W., Grace Hutasoit, Y., Samsudin, A., Bisnis, A., Ilmu Sosial dan Ilmu Politik, F., & Pembangunan Nasional Jawa Timur, U. (2023). *Analisis Risiko Investasi Saham Melalui Diversifikasi Portofolio secara Domestik dan Internasional*. *4*, 1330.

Brito, I. (2023). A portfolio stock selection model based on expected utility, entropy and variance. *Expert Systems with Applications*, *213*. https://doi.org/10.1016/j.eswa.2022.118896

Ella Anggraini, A. R. (2024). Perbandingan Kinerja Reksadana Sham Konvensional dengan Reksadana Saham Syariah dengan Metode Indeks Sharpe, Indeks Treynor dan Alpha Jensen yang dilakukan pada periode Pandemi Covid 19. *Realible Accounting Journal*, Vol. 3 No. 2

Fabbozi, F. (1999). *Manajemen Investasi.* Jakarta: Salemba Empat

Jogiyanto. (2003). *Analisis Investasi dan Teori Portfolio.* Yogyakarta: Gajah Mada Press

Huang, H. H., Chang, T. H., & Wang, C. P. (2024). Investment performance comparison among various portfolio selection strategies in Taiwan stock market. *Asia Pacific Management Review*, *29*(2), 195–214. https://doi.org/10.1016/j.apmrv.2024.03.001

Kiky, A., Suparman, M., & Marcella, V. (2022). *Portofolio dan Diversifikasi Investasi Pasca Covid-19 Kajian Portofolio Saham Kapitalisasi Tinggi Di Indonesia*. *6*(1). http://ejournal.bsi.ac.id/ejurnal/index.php/ecodemica

Mudasetia, H. (1995). Analisis Penentuan Saham yang akan dibelu, Suatu Tinjauan Umum. *Kajian Bisnis*, No 6 September

Najmudin. (2009). EKSISTENSI PROFITABILITAS STRATEGI INVESTASI MOMENTUM DI BURSA EFEK INDONESIA. *PERFORMANCE*, Vol. 9 No. 2 (p.1-20).

Priyanti, A., Nurhayati, I., Amind, R. S., & Manager, D. R. J. (2021). ANALISIS EVALUASI KINERJA PORTOFOLIO SAHAM DENGAN METODE SHARPE. In *2 Mei* (Vol. 4, Issue 2). http://ejournal.uika-bogor.ac.id/index.php/MANAGER

Rachmawati, R., Wahyudi, S., Pangestuti, I. R. D., & Najmudin. (2020). Funds manager and mutual funds characteristics on mutual funds performance: Empirical evidence of equity mutual funds in Indonesia. *International Journal of Financial Research*, *11*(2), 77–87. https://doi.org/10.5430/ijfr.v11n2p77

Ramadhan, M., Suharti, T., & Nurhayati, I. (2020). DIVERSIFIKASI SAHAM DALAM PEMBENTUKAN PORTOFOLIO UNTUK MEMINIMUMKAN RISIKO. In *Immas Nurhayati Jurnal Manager* (Vol. 3, Issue 4). http://ejournal.uikabogor.ac.id/index.php/Manager/index

Samsul, M. (2006). *Pasar Modal dan manajemen portfolio.* Jakarta: Erlangga.

Sartono, R. (1998). *Rasionalitas Investor Terhadap Pemilihan Saham dan Penentuan Portfolio Optimal dengan Metode Indeks di BEJ.* Kelola No 17/VII/1998.

Setiyono, E. (2016). Pengaruh Kinerja Keuangan dan Ukuran Perusahaan Terhadap Return Saham. *Jurnal Ilmu dan Riset Akuntansi*, Volume 5, Nomor 5.

Sharpe, W. (1995). Risk, Market Sensitivy and Diversified. *Financial and Quantitative Analysis*, Januari - Februari, pp.88-94.

Statman, M. (1987). How Many Stock Make a Diversified Portfolio. *Journal of Financial and Quantitative Analysis*, Vol.22 no 2 September p.353-363.

Sugiyono. (2013). *Metode Penelitian Kuantitatif Kualitatif dan R&D.* Bandung: CV. Alfabeta.

Sumariyah. (1997). *Teori Portfolio: Pengantar Pengetahuan Pasar Modal.* Yogyakarta: UPP AMPN YKPN.

Tandellin, E. (2001). *Analisis Investasi dan Manajemen Portfolio.* Yogyakarta: BPFE.

Tuerah, C. (2013). Perbandingan Kinerja Saham LQ45 Tahun 2012 Menggunakan Metode Jensen, Sharpe dan Treynor. *Jurnal EMBA*, Vol. 1 No. 4 Hal. 1444-1457.

Yunita, I. (n.d.). *Evaluasi Kinerja Investasi Saham Syariah menggunakan Indeks Sharpe, Treynor dan Jensen Periode 2021-2022*. https://doi.org/10.29040/jiei.v9i1.7348

Yuri, I. A., Lisadi, N. O., & Sari, M. R. (2022). Analisis Kinerja Portofolio Saham Perusahaan Pada Sektor Jasa Penerbangan Di Beberapa Negara Asean. *Jurnal Ilmiah Akuntansi Kesatuan*, *9*(3), 563–574. https://doi.org/10.37641/jiakes.v9i3.905