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Analysis of Stock Portfolio Performance Using Passive Strategy and Active Strategy with Single Index Model

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ABSTRACT

This study aims to determine and analyze the differences in return and risk performance results of passive and active strategies using the Single Index Model. Then measure the return performance using the Sharpe Index, Treynor, and Jensen's Alpha. This research was conducted on Sri-Kehati index stocks for the period November 2019 to November 2021. Based on passive portfolio strategy research, there are three stocks that form the optimal portfolio, namely BBCA, BBRI, SIDO. While based on active portfolio strategy research, in the first year there were three stocks that formed the optimal portfolio, then in the second year there were seven stocks forming the optimal portfolio, namely BBCA, BBRI, DSNG, INCO, SIDO, SMGR, WIKA. Based on performance measurement using Sharpe, Treynor and Jensen's Alpha indices, the Active Portfolio Strategy is better than the Passive Portfolio Strategy. Meanwhile, based on the difference test using the Mann Whitney U test method, it can be concluded that there is no significant difference in return performance between passive and active portfolio strategies.

INTRODUCTION

"Investment is a commitment of a number of funds for the purpose of obtaining profits in the future. The expectation of future profits is compensation for the time and risks associated with the investment made (Tandelilin, 2017)". In the context of investing, the expected return is often called return. In addition to return, there is also the concept of risk in investing in the money market and capital market. The potential difference between actual and expected returns can be interpreted as investment risk. The two concepts of risk and return are always two sides of the same coin. That is, in addition to calculating the expected return, investors must also pay attention to the risks they take. Therefore, investors should exercise caution when looking for investment alternatives that offer the highest expected return at a certain level of risk, or investments that offer a certain return at the lowest level of risk.

There are several stages in the investment decision-making process, including setting investment goals, setting investment guidelines, selecting portfolio strategies, selecting assets, and measuring and evaluating portfolio performance. The asset selection and portfolio management stage recognizes the concept of risk reduction by adding securities to the portfolio. The concept is that as you continue to add security types to your portfolio until it reaches a certain point where mitigation begins, the greater the risk mitigation is achieved. This concept corresponds to the law of large numbers in statistics, which states that the larger the sample, the more likely it is that the sample average is close to the population's expectations. Portfolio risk reduction is also almost the same as the principle of insurance, the insurer reduces risk by taking out as much insurance as possible.

Investing in shares on the Indonesia Stock Exchange offers a very high return. According to data from www.investing.com, the performance of the Composite Stock Price Index (JCI) from 2006 to 2021 averaged 13.29% or higher than the deposit rate expressed in Bank Indonesia's interest rate of 6.36%, and the yield on 10 (ten) year Government Bonds which was only 8.00 percent

Stock investment is an investment instrument that can provide high returns but is accompanied by high risk. To minimize risk, investors need to put together an optimal portfolio that can spread risk. The optimal portfolio relies heavily on the investor's in-depth analysis when observing and analyzing the market.

When investing in the stock market, investors basically have a large number of indices that can be used as a reference when building a portfolio. A stock index is a statistical measure of changes in stock price movements that is periodically evaluated from a set of stocks selected based on established criteria and methodologies. Stock indices are usually used as an investment tool. Data from the Investment Company Institute shows that the development of passive investment is on the rise worldwide. In the US, passive investment (index funds and ETFs) increased by $1.8 trillion from 2010 to 2019, while active investment (non-index funds) fell by $1.8 trillion and $1.7 trillion, respectively. In Indonesia alone, the use of the Indonesia Stock Exchange Index (IDX) as an investment product increased significantly from the total managed funds of Rp 2.72 trillion at the end of 2015 to Rp 2.7 trillion. 15.88 trillion at the end of 2020, representing a CAGR of 42 percent over the past five years.

In a CNBC Indonesia report, Khoirul Anam (2022) shows that the Indonesian stock market is attracting more and more investors to companies that apply environmental and social governance (ESG) principles. Data from McKinsey & Company and The Boston Consulting Group shows that companies that apply ESG principles deliver better results than others.

The concept of ESG answers phenomena related to climate change and the sustainability of a company. This concept was first initiated in the Kyoto Protocol Agreement (1997) to reduce greenhouse gas emissions that contribute greatly to global warming. Followed by the Paris Agreement (2016) which was attended by 195 heads of state who formed an agreement to carry out the mission of reducing gas emissions with the aim of tackling climate change. Indonesia itself has set its commitment through the ratification of the Paris Agreement with Law No. 16 of 2016 and delivered a Nationally Determined Contribution (NDC) with a target of reducing greenhouse gas emissions by 29 percent in 2030.

ESG (Environmental, Social, and Governance) is a corporate standard for investing through three criteria, namely environmental, social, and good governance. Environmental criteria include matters related to the conservation of natural resources such as waste, toxic emission management, and environmental impact analysis (AMDAL). Social criteria ensure good interaction and rights between parties in the company, between workers, suppliers, and consumers so that there is no conflict of interest. While the criteria for governance are the application of quality, transparent, credible company management, and compliance with applicable laws and regulations.

The Indonesia Stock Exchange together with the KEHATI Foundation published a Green Index called the Sustainable and Responsible Investment (SRI)-KEHATI Stock Index which was launched on June 8, 2009, with reference to the United Nations' Principles for Responsible Investment (PRI). Selection criteria for companies that apply the principles of sustainable and responsible investment (SRI) and environmental, social and governance (ESG). Currently, SRI-KEHATI is the only reference for investment principles that focus on green economy issues in the Indonesian capital market. The purpose of the SRI-KEHATI Index is to create linkages between the conservation community and the corporate sector.

The SRI-KEHATI Index currently consists of 25 companies listed on the IDX, whose composition is reviewed and updated every semester every year. Since its inception, the index has historically performed superior to several other major indices such as the IDX30 and LQ45. Based on data from www.kehati.or.id, the performance of the SRI-KEHATI Index for the period June 2009 to November 2021 produced a return of 224.19 percent, outperforming the IDX30 index performance of 153.14 percent, and the LQ45 index of 137.42 percent.

The SRI-KEHATI Index allows investors to choose the right stocks based on their fundamental qualities and supports a green economy where all companies are required to apply environmental, social, and good corporate governance (ESG) principles.

Portfolio theory proposed by Markowitz in 1952, known as the Markowitz Model provides an efficient and optimal investment approach, namely forming an optimal portfolio. Markowitz's portfolio theory is based on the mean and variance approaches, where mean is a measure of return and variance is a measure of risk. Markowitz Portfolio Theory, also known as the mean-variance model, by maximizing expected returns (mean) and minimizing uncertainty / risk (variance) to select and form an optimal portfolio (Hartono, 2017).

Basically, investors always want to maximize their expected return with a certain level of risk they are willing to bear, or look for a portfolio that offers the lowest risk with a certain return (Tandelilin 2017, p.164). The portfolio formed is called an efficient portfolio. An optimal portfolio is a portfolio that is taken according to the investor's choice from a set of efficient sets of portfolios.

In forming an optimal portfolio, investors can use various portfolio formation models including the single index model. This model was introduced by William F. Sharpe in 1963 to simplify input parameters when calculating very complex Markowitz models. The single index model takes into account market aspects and the uniqueness of companies.

A research study conducted by Nanang Pratama (2019) states that the single index model is better and the risk is smaller than the Markowitz model with more stock criteria thereby reducing the greater level of risk. Another study from Oktaviani and Wijayanto (2016) states that the single index model is considered simpler than the very complex Markowitz model. Research from Septyanto and Kertopati (2014) states that the Markowitz model assumes continuous portfolio addition, where at some point, these benefits will decrease and can increase portfolio risk. The research also showed that the expected rate of return was higher for the single-index model approach than for the Markowitz approach.

On the other hand, investors are generally still concerned about the level of accuracy of the resulting portfolio model, therefore, investors need to evaluate the portfolio by measuring performance to find out and ensure that the portfolio produces optimal returns and risk levels according to investor expectations.

According to Samsul (2015), models that can measure portfolio performance are generally the Sharpe, Treynor, and Jensen's Alpha models. The Treynor model is the most suitable model for research because it considers market factors (beta) in its calculations. Research by Zahid (2015) which states that portfolio performance evaluation using the Sharpe, Treynor, Jensen, Sortino, and Information Ratio methods shows good performance because the value of the overall evaluation produces a positive value.

The measurement period in this study is the period from November 2019 to November 2021. Stock data taken based on criteria for stocks that are consistently included in the SRI-KEHATI Index during the study period. This period was taken based on economic conditions that were declining due to the Covid-19 pandemic. The concept of green economy or commonly known as green economy is considered to be one of the important concepts to overcome the economic impact of the Covid-19 pandemic, in addition to government policies and stimulus packages. This is revealed in the latest report of the Climate Policy Initiative (CPI) and Vivid Economics entitled Improving the Impact of Fiscal Stimulus in Asia: An Analysis of Green Recovery Investments and Opportunities.

In forming a stock portfolio, there are several investment strategies that can be used by capital market investors, namely passive strategies and active strategies. A passive strategy is a portfolio that can generate the best returns in an efficient capital market. A portfolio is identified as an attainable market portfolio based on the level of portfolio capitalization of all risky assets. There are several strategies used in passive strategies, including indexing strategy and buy-and-hold strategy. On the other hand, active strategies have several portfolio strategies, including stock selection, sector rotation, and market momentum strategies.

In a passive portfolio strategy does not require too many positions, so it can minimize ordinary decision-making. This can happen because the analysis related to the purchase of shares has been done before. The trading intensity of a passive strategy does not require high costs because the transactions carried out are when the goals set by the investor have been achieved or when the stock price rises or falls significantly. However, passive portfolio strategies have several disadvantages where they generally have returns close to or equal to market returns, in addition to that increased market price volatility can eliminate the opportunity for investors to take advantage of momentum in search of abnormal returns.

On the other hand, investors using active strategies usually actively pick stocks based on information analyzed from stock movements. Active strategies usually make investors become more or more actively involved in stock trading. Investors with active strategies usually have skills that other investors don't have. This is because investors actively select stocks that can be included in their portfolio and provide the expected rate of return. The decisions made by investors are based on current market trends and momentum and investors can take advantage of stock price volatility to achieve

maximum returns. However, active portfolio strategies also have the disadvantage of potentially generating higher transaction costs that investors can bear.

In research conducted by research from Setyo and Kurniasih (2020) which states that using a single index model, it was found that 2 stocks that entered the optimal portfolio of the JII index for the 2014-2019 period, namely ICBP and TLKM, were able to outperform market performance. Another study conducted by Mustika and Zulfikar (2021) revealed that there was no significant difference using the *Single Index Model* with an active strategy with a passive strategy using *an indexing* strategy. While Putra, et al (2013) revealed that passive strategies with *buy and hold* are able to outperform active strategies with moving averages when market conditions are *bullish.*. On the other hand, based on research conducted by Bayhaki and Idroes (2016) stated that active strategies using a single index model are better than passive strategies (*indexing*) on the JII index. While Sandya and Prita (2012) stated that active strategies are better to apply for investors because they generate higher returns when compared to passive strategies. Lestari and Rahardian (2021) revealed that medium-term active portfolio strategies using the PEG and Tobin's Q methods produce low risk and above-average market portfolio profits.

Based on differences from the results of previous studies, researchers intend to conduct research studies related to which portfolio strategies are best applied to stock portfolios using the SRI-KEHATI index for the period November 2019 to November 2021. This study aims to determine and analyze the differences in return and risk performance results of passive and active strategies using the Single Index Model.

RESEARCH METHODS

The type of research used in this study is descriptive research with a quantitative approach. According to Sugiyono (2013: 13), quantitative research methods can be interpreted as research methods based on philosophy positivism, which is used to study a specific population or sample. Sampling is generally done randomly, data collection is carried out using research instruments, and analysis of quantitative or statistical data with the aim of testing established hypotheses. A research variable is something determined by a researcher for an investigation so that information can be obtained about it and conclusions can be drawn (Sugiyono, 2016: 38). Operational Variables are intended to determine the measurement scale of each variable so that the tool can be used to test hypotheses properly and precisely.

This study uses the population in the form of shares of companies on the Indonesia Stock Exchange (IDX) which are included in the SRI-KEHATI index stock group. Multiple samples were determined from such populations using the technique purposive sampling. SRI-KEHATI index stock included in the optimal active and passive portfolio use a single index model for periode November 2019 – 2021.Operational variables for this study can be explained in the following table.

Table 2. Operational Research Variables

No	Variable	Definition	Indicators	Size
1	Realized return	The monthly real rate of return is calculated based on historical data	$R_i = \frac{P_t - P_{t-1}}{P_{t-1}}$	Ratio
2	Expected return	The expected monthly rate of return is determined based on the average monthly realized return	$E(R_i) = \frac{\sum_{t=1}^{n} R_i}{n}$	Ratio
3	Standard deviation	Possible deviations that occur from the expected rate of return. Standard deviation is used to measure the risk of a security or portfolio.	$\sigma = \frac{\sqrt{\sum_t^n R_i - E(R_i)^2}}{N}$	Ratio
4	Beta (β)	Beta is an index that shows the change in the realized rate of return of a stock compared to changes in the market rate of return	$\beta_i = \frac{\sigma_{im}}{\sigma^2{}_{im}}$	Ratio
5	Alpha (α)	The value of the realized rate of return of stocks that are not affected by the market	$\alpha_i = E(R_i) - (\beta_i(R_M))$	Ratio

No	Variable	Definition	Indicators	Size
6	Residual Variants (SEI2)	Residual error due to the discrepancy between the expected value and the actual value	$\sigma_{ei}{}^2 = \frac{\sum_{i=1}^{n}(R_i - \alpha_i - \beta_i R_M)^2}{n}$	Ratio
7	Risk free rate (Rf)	The risk-free rate of return determined by the Government through Bank Indonesia. The determination of Rf was carried out by calculating the average Rf value released by the Government during the study period	$\frac{\sum Rf}{N}$	Ratio
8	Excess Return to Beta (ERB)	The excess return of a stock compared to its beta.	$ERB_i = \frac{E(R_i) - Rf}{\beta_i}$	Ratio
9	Cut-Off Rate (Ci)	Stock limiting points to determine the high and low ERB. The maximum Ci value is the cut-off point that limits a stock to be the optimal portfolio constituent.	$C_i = \frac{\sigma_m{}^2 \sum_{j=1}^{i} \frac{[E(R_i) - R_{BR}]^{\beta_i}}{\sigma_{ei}{}^2}}{1 + \sigma_m{}^2 \sum_{j=1}^{i} \frac{\beta_i{}^2}{\sigma_{ei}{}^2}}$	Ratio
10	Proportion of Funds (Zi)	Allocation of funds for each stock based on the formation of an optimal portfolio	$(Z_i) = \frac{\beta_i}{\sigma_{ei}{}^2}(ERB_i - C^*)$	Ratio
11	Expected Portfolio Return (Rp)	Expected return from optimal portfolio	$E(R_i) = \alpha_i + \beta_i E(R_m)$	Ratio
12	Portfolio Risk (σ i2)	Variants of return from optimal portfolio	$\sigma_i^2 = \beta_i^2 \sigma_m^2 + \sigma_{ci}^2$	Ratio
13	Sharpe Ratio	A portfolio performance index that is the net yield of a portfolio with a risk- free interest rate per unit of risk measured based on the standard deviation of an investment	$\frac{E(Rp) - Rf}{\sigma p}$	Ratio
14	Treynor Ratio	The portfolio performance index is the net yield of a portfolio with a risk-free interest rate per unit of risk measured based on the beta of an investment	$\frac{E(R_p) - R_f}{\beta_p}$	Ratio
15	Jensen's Alpha Ratio	The portfolio performance index is the net yield of the portfolio with a risk- free interest rate per unit of risk measured based on market movement performance	$[E(R_p) - R_f] - [\beta_p(R_m - R_f)]$	Ratio

RESULTS AND DISCUSSION

Based on the calculation of Sri-Kehati Index stocks for the November 2019 period, the ERB values are as follows.

Table 3 Optimal stocks of Sri Kehati Index for November 2019 period

Code	Exp Return $E(R_{im})$	Beta (β)	Std. Deviasi (σ_{im})	Bl-rate (R_f)	ERB	Ai	Bi	C	C*	ERB - C*	Description	
AALI	-0.0049	0.6048	0.0758	0.0042	-0.0151	-0.9618	105.1708	-0.0006	0.0059	-0.0210	ERB < C*	
ADHI	-0.0095	2.5078	0.1172	0.0042	-0.0055	-2.5128	182.5812	-0.0016	0.0059	-0.0113	ERB < C*	
ASII	-0.0026	1.1227	0.0553	0.0042	-0.0061	-2.5219	366.8767	-0.0014	0.0059	-0.0120	ERB < C*	
BBCA	0.0229	1.0841	0.0413	0.0042	0.0172	11.8223	634.5588	0.0059	0.0059	0.0113	ERB > C*	Optimal Stock
BBNI	0.0134	2.0388	0.0792	0.0042	0.0045	2.9676	324.9460	0.0017	0.0059	-0.0014	ERB < C*	

Code	Exp Return $E(R_{im})$	Beta (β)	Std. Deviasi (σ_{im})	Bl-rate (R_f)	ERB	Ai	Bi	C	C*	ERB - C*	Description		
BBRI	0.0192	1.6027	0.0572	0.0042	0.0093	7.3187	489.8355	0.0039	0.0059	0.0035	ERB C*	>	Optimal Stock
BBTN	0.0128	1.6160	0.1078	0.0042	0.0053	1.1956	139.1641	0.0008	0.0059	-0.0005	ERB C*	<	
BMRI	0.0090	1.0353	0.0473	0.0042	0.0046	2.2004	462.9635	0.0012	0.0059	-0.0013	ERB C*	<	
BSDE	-0.0061	1.2548	0.0715	0.0042	-0.0082	-2.5386	-245.7541	-0.0016	0.0059	-0.0141	ERB C*	<	
INDF	0.0029	0.8945	0.0567	0.0042	-0.0015	-0.3783	-278.6239	-0.0002	0.0059	-0.0074	ERB C*	<	
JPFA	0.0071	1.4353	0.1249	0.0042	0.0020	0.2657	92.0484	0.0002	0.0059	-0.0038	ERB C*	<	
JSMR	0.0077	1.2840	0.0770	0.0042	0.0027	0.7408	216.5503	0.0005	0.0059	-0.0032	ERB C*	<	
KLBF	0.0020	1.0486	0.0556	0.0042	-0.0022	-0.7778	-338.6460	-0.0005	0.0059	-0.0080	ERB C*	<	
PGAS	-0.0012	1.8562	0.1318	0.0042	-0.0030	-0.5857	-106.8762	-0.0004	0.0059	-0.0088	ERB C*	<	
PJAA	-0.0170	0.6446	0.0600	0.0042	-0.0330	-3.8114	-179.3336	-0.0024	0.0059	-0.0388	ERB C*	<	
PPRO	-0.0410	2.5750	0.1153	0.0042	-0.0176	-8.7781	-193.8408	-0.0056	0.0059	-0.0234	ERB C*	<	
SIDO	0.0270	0.0581	0.0837	0.0042	0.3910	0.1882	8.2877	0.0001	0.0059	0.3851	ERB C*	>	Optimal Stock
SMGR	0.0123	2.3592	0.1055	0.0042	0.0034	1.6988	212.0680	0.0011	0.0059	-0.0025	ERB C*	<	
TINS	-0.0030	2.8573	0.1701	0.0042	-0.0025	-0.7151	-98.720	-0.0005	0.0059	-0.0084	ERB C*	<	
TLKM	0.0025	0.2318	0.0540	0.0042	-0.0074	-0.1357	-79.4150	-0.0001	0.0059	-0.0132	ERB C*	<	
UNTR	0.0028	0.8896	0.0762	0.0042	-0.0016	-0.2204	-153.0385	-0.0001	0.0059	-0.0075	ERB C*	<	
UNVR	0.0023	1.0105	0.0552	0.0042	-0.0019	-0.6411	-331.5405	-0.0004	0.0059	-0.0078	ERB C*	<	
WIKA	-0.0014	2.5876	0.1317	0.0042	-0.0022	-0.8486	-149.1249	-0.0006	0.0059	-0.0081	ERB C*	<	
WSKT	-0.0140	2.8753	0.1128	0.0042	-0.0063	-4.1186	-226.1269	-0.0026	0.0059	-0.0122	ERB C*	<	
WTON	-0.0109	1.5191	0.1155	0.0042	-0.0100	-1.7242	-113.9169	-0.0012	0.0059	-0.0158	ERB C*	<	

Based on these calculations, the ERB value of each Sri Kehati index stock and the cutoff point (C*) value obtained from the highest C value result. The optimal stocks are determined based on the Excess Return to Beta (ERB) value of the stock which is greater than the cutoff point value (ERB > C*). These optimal stocks include BBCA, BBRI, SIDO with ERB values of 0.0112, 0.0035, and 0.3851.

Based on the calculation of Zi value, the portfolio allocation can be explained as follows: 1) BBCA stock portfolio with Zi value of 7.1868 with an allocation of 59.52%, BBRI stock portfolio with Zi value of 1.6964 with allocation of 14.05%, and SIDO shares with Zi value of 3.1919 with allocation of 26.43%.

Based on the calculation above, the SIM Passive Strategy Portfolio generates a monthly Expected Return of 1.04% (11.16% on an annualized basis), with risk levels measured by beta and standard deviation of 0.8067 and 0.0559 respectively.

The formation of the Active Strategy SIM portfolio was carried out in 2 (two) stages, namely the formation of a portfolio in the first year with optimal stocks that were the same as the passive strategy because it used the November 2019 Sri-Kehati index benchmark, but in November 2020, portfolio changes were made using the November 2020 Sri-Kehati index with optimal stocks as follows.

Table 4 Optimal stocks of Sri Kehati Index for November 2020 period

Code Stock	Exp Return $E(R_{im})$	Beta (β)	Bl-rate (R_f)	ERB	Ai	Bi	C	C*	ERB - C*	Description
ASII	-0.0067	1.3278	0.0042	-0.0082	-1.5940	-146.2913	-0.0029	0.0037	-0.0119	ERB<C*
AUTO	-0.0143	1.2539	0.0042	-0.0147	-2.5153	-136.4033	-0.0046	0.0037	-0.0184	ERB<C*

Code Stock	Exp Return $E(R_{im})$	Beta (β)	Bl-rate (R_f)	ERB	Ai	Bi	C	C*	ERB - C*	Description	
BBCA	0.0134	0.8967	0.0042	0.0103	2.5007	271.5370	0.0037	0.0037	0.0066	ERB>C*	Optimal Stock
BBNI	0.0005	2.1496	0.0042	-0.0017	-0.4938	-135.1828	0.0009	0.0037	-0.0054	ERB<C*	
BBRI	0.0109	1.5121	0.0042	0.0044	1.2457	185.6788	0.0021	0.0037	0.0008	ERB > C*	Optimal Stock
BBTN	0.0016	2.4198	0.0042	-0.0024	-0.4103	-71.3953	0.0008	0.0037	-0.0060	ERB<C*	
BMRI	0.0002	1.5282	0.0042	-0.0026	-0.7291	-183.0616	0.0012	0.0037	-0.0063	ERB<C*	
BSDE	0.0062	1.6038	0.0042	-0.0065	-1.3451	-129.2275	0.0025	0.0037	-0.0101	ERB<C*	
DSNG	0.0061	0.4206	0.0042	0.0046	0.0826	42.9774	0.0002	0.0037	0.0009	ERB > C*	Optimal Stock
INDF	0.0018	0.5914	0.0042	-0.0041	-0.2576	-107.5313	0.0005	0.0037	-0.0077	ERB<C*	
INCO	0.0238	1.8188	0.0042	0.0108	1.8220	92.6879	0.0036	0.0037	0.0071	ERB > C*	Optimal Stock
INTP	0.0005	1.4712	0.0042	-0.0032	-0.5286	-112.6100	0.0010	0.0037	-0.0069	ERB<C*	
JSMR	0.0031	1.7013	0.0042	-0.0043	-0.8009	-110.6318	0.0015	0.0037	-0.0079	ERB<C*	
KLBF	0.0007	0.7187	0.0042	-0.0048	-0.4831	-140.8523	0.0009	0.0037	-0.0084	ERB<C*	
LSIP	0.0037	1.2881	0.0042	-0.0004	-0.0349	-74.8824	0.0001	0.0037	-0.0040	ERB<C*	
NISP	0.0046	0.2479	0.0042	-0.0355	-0.8668	-98.5234	0.0017	0.0037	-0.0392	ERB<C*	
PGAS	0.0092	2.7061	0.0042	0.0018	0.4435	88.7248	0.0009	0.0037	-0.0018	ERB<C*	
PJAA	0.0160	1.6518	0.0042	-0.0122	-2.5849	-128.2040	0.0048	0.0037	-0.0159	ERB<C*	
PTPP	0.0025	3.3830	0.0042	-0.0005	-0.1500	-88.1214	0.0003	0.0037	-0.0042	ERB<C*	
SIDO	0.0345	0.2195	0.0042	0.1381	0.9530	31.4394	0.0022	0.0037	0.1345	ERB > C*	Optimal Stock
SMGR	0.0140	1.7915	0.0042	0.0055	1.0601	108.3759	0.0020	0.0037	0.0018	ERB > C*	Optimal Stock
TLKM	0.0046	0.7130	0.0042	-0.0123	-1.2395	-141.8070	0.0022	0.0037	-0.0159	ERB<C*	
UNTR	0.0063	0.6064	0.0042	-0.0173	-0.7505	-71.3760	0.0016	0.0037	-0.0210	ERB<C*	
UNVR	0.0047	0.4085	0.0042	-0.0218	-0.8561	-96.1743	0.0017	0.0037	-0.0255	ERB<C*	
WIKA	0.0140	2.6749	0.0042	0.0037	0.8503	86.6026	0.0017	0.0037	0.0000	ERB > C*	Optimal Stock

Based on these calculations, the ERB value of each Sri Kehati index stock and the cutoff point (C*) value obtained from the highest C value result. The optimal stocks of SIM Strategy Active for the second year period are determined based on the Excess Return to Beta (ERB) value of the stock which is greater than the cutoff point value (ERB > C*). These optimal stocks include BBCA, BBRI, DSNG, INCO, SIDO, SMGR, WIKA with ERB values of 0.0066, 0.0008, 0.0009, 0.0071, 0.1345, 0.0018, 0.00001 respectively.

Based on the calculation of the Z value, the second year's Active Strategy SIM portfolio allocation can be explained as follows:

1. BBCA stock portfolio with a Z value of 1.7950 with an allocation of 25.41%
2. BBRI stock portfolio with a Z Value of 0.1443 with an allocation of 2.04%
3. DSNG stock portfolio with a Z Value of 0.0391 with an allocation of 0.55%
4. INCO stock portfolio with a Z Value of 0.6625 with an allocation of 9.38%
5. SIDO stock portfolio with a Z Value of 4.2276 with an allocation of 59.84%
6. SMGR stock portfolio with a Z Value of 0.1951 with an allocation of 2.76%
7. WIKA stock portfolio with a Z Value of 0.0009 with an allocation of 0.01%

Based on the calculation above, the SIM Strategy Active portfolio generated a monthly return of 1.09% or (11.57% annualized) better than the market monthly return (JCI) of 0.51% (5.97%

annualized). The risk levels measured by beta and the standard deviation of the portfolio are 0.8257 and 0.0599, respectively.

Portfolio Performance

Expected Return E (Rp) or the level of profit expected by investors from the optimal portfolio formed. Based on the calculation above, it can be concluded that the Active SIM portfolio strategy is better than the Passive SIM Portfolio Strategy and the JCI Market Portfolio. This can be seen from the comparison of NAV value and return.

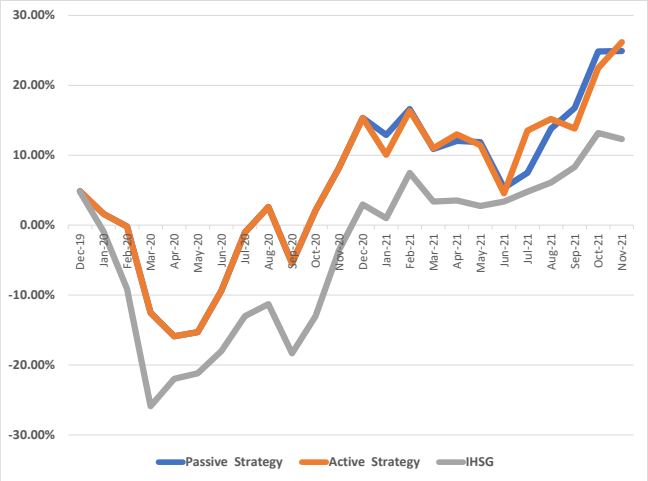

Figure 1 Portofolio Return Comparison

The NAV value of the Active Strategy SIM Portfolio in the final measurement period of November 2021 was 1.244,90 (annualized return 11.57%) or better than the NAV Value of the Passive Strategy SIM Portfolio of 1.235,77 (annualized return 11.16%) and better than the JCI value of 6,533.93 (annualized return 5.97%).

Portfolio Performance Measurement Using Sharpe, Treynor, and Jensen Alpha

Based on the calculation of the Sharpe index, it can be concluded that the performance of the SIM Active Strategy Portfolio is better than the performance of the Passive Strategy SIM Portfolio and JCI. The SIM Strategy Active Portfolio yielded a Sharpe index of 0.1266 or better than the SIM Strategy Active Portfolio of 0.1262 and JCI of 0.0314.

Table 5 Comparison of Portfolio Performance Using the Sharpe Ratio Index

Portfolio	Portfolio Return 1	Rf 2	Std. Dev 3	Index Sharpe 4= (1-2)/3
Passive Strategy	0.0104	0.0033	0.0559	0.1262
Active Strategy	0.0109	0.0033	0.0559	0.1266
IHSG	0.0051	0.0033	0.0574	0.0314

Based on Treynor's index calculations, it can be concluded that the performance of the SIM Strategy Active Portfolio is better than the performance of the SIM Strategy Passive Portfolio and JCI. The Active Strategy SIM Portfolio yielded a Treynor index of 0.0091 or better than the Passive Strategy SIM Portfolio of 0.0087 and JCI of 0.0018.

Table 6 Comparison of Portfolio Performance Using the Sharpe Ratio Index

Portfolio	Portfolio Return 1	Rf 2	Beta 3	Index Treynor 4= (1-2)/3
Passive Strategy	0.0104	0.0033	0.8067	0.0087
Active Strategy	0.0109	0.0033	0.8261	0.0091
IHSG	0.0051	0.0033	1.0000	0.0018

Based on the calculation of Jensen's Alpha index, it can be concluded that the performance of the Active Strategy SIM Portfolio is better than the performance of the Passive Strategy SIM Portfolio. The Active Strategy SIM Portfolio yields a Jensen's Alpha index of 0.0061 or better than the Active Strategy SIM Portfolio of 0.0056.

Table 7 Comparison of Portfolio Performance Using the Sharpe Ratio Index

Portfolio	Portfolio Return 1	Rf 2	Beta 3	Market Return 4	Index Treynor 5 = (1-2)/3
Passive Strategy	0.0104	0.0033	0.8067	0.0051	0.0056
Active Strategy	0.0109	0.0033	0.8261	0.0051	0.0061

The results of this study are in line with the research of Sandya and Prita (2012) and Lestari and Rahardian (2021) where active strategies are better used by investors compared to passive strategies because they generate higher returns. This research is different from the hypothesis expressed by According to Mahadwartha, et al (2014) which states that passive strategies with buy and hold strategies are able to outperform active strategies with moving averages when market conditions are bullish.

Hypothesis Testing Results

Mann Whitney U-Test

To test the difference between two independent samples, researchers use the non-parametric Mann-Whitney U test. The Mann-Whitney U test is a non-parametric test used to compare the rank or median of two independent samples. The Mann-Whitney U Test hypothesis of the difference in the results of the active portfolio strategy and the passive portfolio strategy is as follows:

H0 : There is no significant difference between the investment returns of an active portfolio strategy and a passive portfolio strategy.

H1 : There is a significant difference between the investment returns of an active portfolio strategy and a passive portfolio strategy.

Based on the statistical results of the Mann-Whitney U Test can be concluded as follows:

Table 8. Mann-Whitney Test

Ranks

	Pengukuran	N	Mean Rank	Sum of Ranks
Mann Whitney U	Strategi Pasif	3	3.00	9.00
	Strategi Aktif	3	4.00	12.00
	Total	6		

Test Statistics[a]

	Pengukuran
Mann-Whitney U	3.000
Wilcoxon W	9.000
Z	-.655
Asymp. Sig. (2-tailed)	.513
Exact Sig. [2*(1-tailed Sig.)]	.700[b]
Exact Sig. (2-tailed)	.700
Exact Sig. (1-tailed)	.350
Point Probability	.150

a. Grouping Variable: VAR00017

b. Not corrected for ties.

Asymp.Sig (2-tailed) shows a value of 0.513, indicating that there is not enough statistical evidence to conclude that there is a significant difference between the active portfolio strategy and the passive portfolio strategy.

DISCUSSION

Based on the results of research data analysis, it can be concluded as follows:

1. The Passive Strategy Portfolio using the Single Index Model was carried out using the Sri-Kehati index in 2019 with a buy and hold strategy during the research period. The optimal portfolio consists of stocks including BBCA at 59.52%, BBRI at 14.05%, and SIDO at 26.43%.
2. The Active Strategy Portfolio using the Single Index Model was carried out with the Sri-Kehati index in 2019 in the first year, and reshaped in the second year using the Sri-Kehati index in 2020. The Optimal Active Strategy portfolio in the first year was BBCA at 59.52%, BBRI at 14.05%, and SIDO at 26.43%. Meanwhile, in the second year, the optimal portfolio consists of stocks including BBCA by 25.41%, BBRI by 2.04%, DSNG by 0.55%, INCO by 9.38%, SIDO is 59.84%, SMGR is 2.76%, and PT Wijaya Karya WIKA is 0.01%.
3. Based on portfolio performance evaluation using Sharpe index, Treynor index, and Jensen's Alpha index, Active Portfolio Strategy is superior to Passive Strategy. This is because the Active Portfolio Strategy is based on the belief that skilled investors can identify investment opportunities that will yield better returns than the market as a whole. Some key concepts in active portfolio theory include:
    a. Alpha search is a performance measure that indicates the extent to which an investment's actual returns exceed or fall short of expectations based on market risk. Active investors strive to generate positive alpha.
    b. In-depth Fundamental Analysis, by analyzing economic conditions, company performance, and other factors that affect asset prices. The goal is to identify stocks or assets that are considered overvalued or undervalued.
    c. Portfolio Rotation. Investors can rotate portfolios i.e. actively buy and sell assets to achieve better returns than can be achieved through passive strategies.

In this case, the strategy actively changes the portfolio using the Sri Kehati index benchmark in 2020 or in the second year to adjust for portfolio changes in the Sri-Kehati index. The dominant changes include BBCA shares from 59.52% to 25.41%, BBRI shares from 14.05% to 2.04%, while SIDO shares rose to 59.84% from the previous 26.43%. This is of course caused by several factors, including:

1. Historical Trend is a stock price analysis that involves observing patterns of stock price movements. It can be seen in Figure 4.3 that BBCA and BBRI's share prices fell in March and April 2020 in line with the Government Announcement in early March 2020. Meanwhile, SIDO shares are relatively rising or stable because SIDO shares are a sector of the pharmaceutical and health industries so that many people are interested in health products.
2. Financial Fundamentals involves analyzing the financial health of a company. Based on the report released in 2020, BBCA and BBRI shares experienced a decrease in net profit by -5.14% and -45.70%, respectively. while SIDO's shares recorded a net profit in 2020 increased by 16.00%.
3. Market Sentiment includes market views or perceptions related to economic events, industry changes or business cycles, and corporate actions. The majority of leading stocks on the Indonesia Stock Exchange fell during the Covid 19 pandemic. Especially Bank stocks such as BBCA and BBRI which experienced a decline, several factors that caused among others:
    a. The occurrence of an economic recession due to a decline in global economic activity
    b. The existence of credit risk or allowance for losses due to potential default
    c. Falling interest rates that will reduce the bank's net interest margin. Meanwhile, SIDO shares benefit from the behavior of people who will indirectly look for alternative health products during the Covid 19 pandemic.

CONCLUSION

In the selection of Portfolio Strategy is always adjusted by the investment objectives of an investor. In this study the Active Strategy is better than the Passive Strategy, considering that the active portfolio strategy seeks to generate higher returns than the market by looking for abnormal returns and avoiding underperforming stocks. In this study, it is stated that in the second year period, active strategy to make portfolio changes in accordance with changes in SRI-KEHATI index stocks. Because the

benchmark index will periodically make changes to the stocks in the index to adjust the fundamental performance of issuers.

Overall, the results of this statistical interpretation show that based on the Mann-Whitney U test and Wilcoxon W tests, there is no significant difference between the investment returns of active portfolio strategies and passive portfolio strategies. There are several research limitations, including the research period. In future research, researchers are expected to be able to conduct research in the medium and or long term so that there is a significant difference between passive portfolio strategies and passive portfolio strategies.

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