

THE EFFECT OF TECHNICAL ANALYSIS ON CRYPTOCURRENCY INVESTMENT RETURNS WITH THE 5 (FIVE) HIGHEST MARKET CAPITALIZATIONS IN INDONESIA

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ABSTRACT

This study aims to determine the effect of asset price, asset volume and asset supply on cryptocurrency investment returns with the 5 (five) highest market capitalizations in Indonesia. The population in this study were all coins registered on the indodax exchange service and samples were taken using the purposive sampling method with a total sample of 5 crypto coins. The data analysis method used is multiple linear analysis. The results of this study partially indicate that asset price has a significant effect on returns with a significant value of 0.0197 < 0.05 with a tcount value of (1.235478) < ttable (1.65356), asset volume has no significant effect on returns with a significant value of 0.3833 > 0.05 with a tcount value (-0.874042) < ttable (1.65356),

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1. INTRODUCTION

Cryptocurrency is a virtual currency that is used as an alternative currency where the currency is generated and traded through a cryptographic process. Most of these cryptocurrencies are decentralized in computer-based networks and are based on peer-to-peer technology and open source cryptography that does not depend on a central authority such as a central bank or other administrative institutions. Decisions in choosing investment instruments can be made by buying shares on the Indonesia Stock Exchange (IDX) and selling cryptocurrency markets. The characteristics of the cryptocurrency sales market instrument in Indonesia have similarities with the stock sales market on the IDX in terms of return and risk. The price of a coin in the cryptocurrency market that can move or fluctuate according to the ongoing trend 24 hours a day. Asset Price is a theory used to analyze the price movement of an asset through previous data. This theory is generally used as part of a technical analysis that uses some previous price data. Price Action theory is generally used to analyze prices seen by using candlesticks. This theory uses previous price movements to analyze possible future prices. Generally, this theory is seen by using several things such as by looking at candlestick patterns, chart patterns, and setting lower and upper limits (support and resistance). Besides that, generally this analysis also uses several timeframes or timeframes on the chart so that it gets the right analysis (Coininvest 2017). The following graph of the price movement of a crypto coin can be seen from the following chart 1

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Graph 1. Price Movement of a Crypto Coin

Based on chart 1 above, it can be concluded that bitcoin price movements tend to increase even though at the end of November there was a decline but not too significant to the price of 17,096 USD, then in early December there was a price reversal candle or the trend increased to 24,095.57 USD even though there was a slight drop in prices in mid-December.

Indonesia as a country which is one of the most populous countries in the world certainly has a very broad market potential, and Digital Currency is no exception. Since the increase in the value of Digital Currency in 2017, Digital Currency users in Indonesia have also increased. According to Oscar, the owner of bitcoin.co.id, there are around 1.1 million users in Indonesia, while the daily transaction value is usually 1 trillion Rupiah²². Bank Indonesia realizes that Bitcoin is not the only digital currency in circulation, according to Bank Indonesia there are around 1,400 types of digital currency. The highest capitalization value is owned by Bitcoin with a price of 246 billion dollars, then followed by Ethereum and Ripple at 133 billion dollars and 79 billion dollars, respectively. According to data from CoinMarketCap as of January 13, 2018, the total virtual currency market capitalization has reached 752.542 billion US dollars. (Muhammad Dzakki Abdurrohman, 2019).

With this background, researchers are interested in knowing the Effect Of Tecnical Analysis On Cryptocurrency Investment Return With The 5 (Five) Highest Market Capitalization In Indonesia. This study was conducted to analyze the correlation between analytical techniques on Cryptocurrency returns and their impact on the Indonesian Government's policies regarding the use of Cryptocurrencies between 2018 and 2020.

2. METHOD

Research Objects and Locations

The object of this research is Asset Price, Asset Volume, Asset Supply in Cryptocurrency. In this study, the research location is Cryptocurrency securities that have been registered with BAPPETI through www.indodax.com and others. The population is the entire object of research to be studied. According to Ferdinand (2014: 171), population is a combination of all elements in the form of events, things or people who have similar characteristics that become the center of attention of a researcher because it is seen as a research universe. The population in this study is all coins that have cryptocurrencies registered on the Indodax.com exchange trading service with a total of 110 coins of crypto assets. The sample in this study amounted to 5 samples with a research year of 3 years. Sampling in this study was conducted using the purposive sampling method. According to Sugiono (2008: 124) purposive sampling method is "determination of samples on the basis of the suitability of certain characteristics and criteria".

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Types of research

Data Type used is secondary data in the form of polling data for all variables, namely investment return, asset price, asset volume, and asset supply listed or registered on the indodax.com exchange trading service. This secondary data was obtained by observing the crypto coins registered during the observation (monthly period) from 2018 to 2020.

Data source in this study is the subject from which the data was obtained (Arikunto, 2013:129). The source of data in this study is secondary data. Secondary data is in the form of data related to the number of coins, coin prices, and coin trading volume, which is obtained from the indodax.com trading exchange service and other exchange services.

Data collection technique

This study uses historical data taken during the period 2018-2020. The data that will be obtained from the published financial statements are the 2018-2020 monthly financial statements of the 5 highest market capitalization coins that are the sample that are accessed via the Internet with the site www.indodax.com. Or it can also be accessed from [service](#) other exchanges. Based on the data that has been obtained, discussion and analysis are carried out systematically and objectively.

Variable Operational Definition

According to Sugiono (2008:31) research variables are basically anything in the form of anything that is determined by the researcher to be studied so that information is obtained about it then conclusions are drawn. In accordance with the title of the study, the independent variable in this study is Asset price, Asset volume and Asset supply, while the dependent variable is return on investment.

Independent Variable According to Sugiono (2008:33) "Independent or independent variables are variables that affect or are the cause of the emergence or change of the dependent variable (the dependent variable)". The independent variables used in this study are Asset Price, Asset Volume, and Asset Supply. these three variables were measured using the natural logarithm (LN).

Dependent variable According to Sugiono (2012:39) gives the meaning of the dependent variable as follows: "The dependent variable in Indonesian is often called the dependent variable. The dependent variable is the variable that is influenced or that becomes the result, because of the independent variable". The dependent variable in this research is investment return.

Data analysis method

The data analysis method in this study uses multiple linear regression analysis to obtain a comprehensive picture of the influence between asset price, asset volume, and asset supply variables on investment returns using the Eviews 10 software program for windows. Eviews is a program widely used in education, government and industry. EViews, which stands for Econometric Views, is a new version of the statistical package for manipulating panel data. Although most of the EViews are formulated by economists, the program itself can also be used in fields of study, such as sociology, statistics, finance, etc.

Literatur Riview

Investment

Investment comes from the word invest which means to plant, invest or invest money. In the Big Indonesian Dictionary (KBBI) investment is defined as the investment of money or capital in a company or project for the purpose of making a profit. According to (Tandelilin,

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2010) investment is defined as a commitment of a sum of money or other resources that is carried out now with the hope of obtaining benefits in the future. According to Martalena and Malinda (2011) investment is a form of delaying current consumption to obtain consumption in the future, which contains an element of uncertainty risk so that compensation is needed for the delay. Meanwhile (Mulyadi,

Cryptocurrency

Cryptocurrency is a method for forming virtual coins and providing secure ownership and transactions using cryptographic issues. This problem is designed to be easy to verify but computationally difficult to reach a solution. According to Dimas Ankaa Wijaya (2016) Cryptography is a branch of computer science that studies how to hide information. Different cryptocurrencies use different functions for this purpose, the most common being target hashing, where the hash is calculated so that it comes lower than a certain value. The hash target (i.e. difficulty of the problem) is adjusted each time based on the total total computing power on the network, which has the advantage of keeping the time between solutions more or less constant. A computationally intensive proof of work is a method by which transactions are verified as unique and trustworthy.

Return cryptocurrency is the rate of return on the purchase or investment of cryptocurrency (Widyawati, 2015).

Return Cryptocurrency

Return cryptocurrency is the rate of return on the purchase or investment of cryptocurrency (Widyawati, 2015). The return data on cryptocurrency in this study is the total monthly cryptocurrency return starting from January 2018-December 2018 in rupiah. According to Rosmiati Tarmizi, Herry Goenawan Soedarsa, Indrayenti, Deasy Andrianto (2018), "Investment return is the result that has been obtained from investment in the capital market. Returns can be in the form of realized returns and expected returns that have not yet occurred but are expected in the future.

Asset Price

According to Musdalifah Azis (2015: 80), "price is the price in the real market, and is the most easily determined price because it is the price of a stock in the ongoing market or if the market is closed, then the market price is the closing price". Meanwhile, according to Jogiyanto (2011: 143) defines stock prices as follows. The share price is the price that occurs on the stock exchange at a certain time and the share price is determined by market participants. This is in line with the results of Koskei's research (2017) which shows that the beta risk variable affects the return on Bitcoin. The relationship between price variables and returns in this study refers to several previous studies,

Asset Volume

Stock trading volume is defined as the number of shares traded on a certain day (Halim and Hidayat, 2010). Active trading of a stock, that is, with a large trading volume, indicates that the stock is favored by investors, which means the stock is traded quickly. Volume is an accumulation of supply and demand, if the number of demand and supply increases, one factor in increasing volume is influenced by certain sentiments or news that will have an impact on increasing the trading volume of crypto (certain coins). . The results of research by Kurniawan (2014), Ratnasari (2013) Wahyuliantini and Suarjaya (2015), Firtiana (2014) show that stock trading volume has an effect on stock returns.

Asset Supply

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Supply is a number of goods and services provided for sale at various price levels at a certain time and place. The law of supply is that when the price increases, the quantity of goods/services supplied increases/increases. If the price of goods/services falls, the quantity of goods/services supplied decreases/decreases. The law of supply is directly proportional to the price of the good. This law also does not apply absolutely (*ceteris paribus*), (Muhammad Dinar & Muhammad Hasan, 2018). In line with research conducted by Nil Gonsel, et al (2007) examined the effect of macroeconomic factors on stock returns in the London stock market. The variables used are the structure of interest rate, unanticipated inflation, unanticipated sectoral industrial production, risk premium, the exchanger rate, the Money supply, unanticipated sectoral dividend yield.

Hypothesis

The hypothesis is a temporary assumption of a problem that is still presumption because it still has to be proven true. Previously obtained research results that will be discussed in subsequent chapters, it is necessary to make the results that will be obtained after conducting research.

- H1 = Asset pricesignificant positive effect on return on cryptocurrency investment with the 5 (five) highest market capitalization in Indonesia.
- H2 = Asset volumesignificant positive effect on return on cryptocurrency investment with the 5 (five) highest market capitalization in Indonesia.
- H3 = Asset supplysignificant positive effect on return on cryptocurrency investment with the highest 5 (five) market capitalizations in Indonesia.

3. RESULT AND DISCUSSION

Descriptive statistics

Descriptive statistics provide a general description of the research object that is sampled, the explanation of the data through descriptive statistics is expected to provide an initial picture of the problem being studied. Descriptive statistics are focused on the maximum, minimum, average (mean) and standard deviation values. The full descriptive statistics can be seen in table 1.

Table 1.Descriptive statistics

	Return	Asset Price	Asset Volume	Asset Supply
mean	0.058064	13.53516	16.37422	17.08085
median	0.024945	15.01684	16.80971	17.07080
Maximum	2.051509	19.82279	24.18305	18.86239
Minimum	-0.623051	6.091875	10.20581	14.33965
Std. Dev.	0.342773	4.919217	4.242517	1.497525
Observati on	180	180	180	180

Based on table 1 above, it can be seen that the number of observations made for returns in this study were 180 observations. The lowest value of return in this study is Rp.-0.623.051 and the highest value is Rp. 2,051,509. The average return value is Rp. 0.058.064 with a standard deviation of Rp. 0.342.773. The standard deviation value is greater than the average value. This shows high price fluctuations in the crypto coins sampled in this study. Furthermore, the observations made for the Asset Price in this study were 180 observations with the lowest value of Rp. 6,091,875 and the highest value is Rp. 19,822.79. The average value of Asset Price

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in this study is Rp. 13,535.16 with a standard deviation of Rp. 4,919,217. The standard deviation value is smaller than the average value. This shows a small fluctuation in the Asset Price of the crypto coins sampled in this study. The last variable with the value of observations made for Asset Supply in this study were 180 observations with the lowest value of Rp. 14,339.65 and the highest value is Rp. 18,862.39. The average value of Asset Supply in this study is Rp. 17,080.85 with a standard deviation of Rp. 1,497,525.2. The standard deviation value is smaller than the average value which indicates small fluctuations in Asset Supply in the sample companies in this study.

Correlation Test

Correlation analysis aims to see whether or not there is a relationship and how big the correlation is between two or more variables. In this study the correlation analysis can be seen in Table 2.

Table 2. Correlation Analysis

Correlation Statistics				
Probability	Y	AP	AV	US
Y	1,000,000			
AP	0.166941	1,000,000		
AV	0.042152	-0.585596	1,000,000	
US	0.007117	-0.097306	0.244625	1,000,000
	0.094961	1,304,419	3,365,966	

0.9245* 0.1938* 0.0009*** -----

Source: research results, 2021

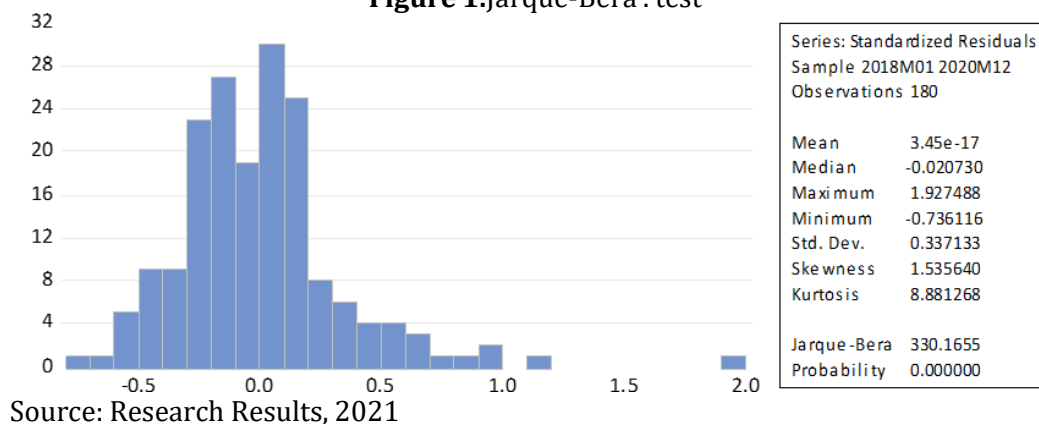
Note: *, **, *** significant at the 1%, 5% and 10% levels.

Based on Table 4.2 above, to see the correlation between all independent variables and the dependent variable, it can be seen in table Y. It was found that the AP variable has a negative correlation with Y of -0.166941 and is significant 5%. AV is positively correlated with Y of 0.562881 and is not significant. US is negatively correlated with Y by -0.007117 and not significant. Meanwhile, the relationship between independent variables can be seen that AV is negatively correlated with AP of -0.585596 and has a significant level of 1%. AV and AS were negatively correlated with AP by -0.585596 and -0.097306 and had significant levels of 1% and 10%, respectively. AS is positively correlated with AV by 0.244625 and significant 1%.

Normality test

Normality test is used to test whether the regression model has a normal distribution or not. The assumption of normality is a very important requirement in the test of significance (significance), the significance used is = 5% regression coefficient. The results of the Jarque-Bera test in this study are shown as follows:

Figure 1. Jarque-Bera . test



Source: Research Results, 2021

Based on the picture above, it can be seen that the probability value in the Jarque-Bera test is 77.64996 with the probability value being below the standard error tolerance value of 0.000000 < 0.05. Therefore, it can be concluded that in this study it was not normally distributed.

Heteroscedasticity

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance and residuals from one observation to another, if the variance of the residuals from one observation to another is fixed then it is called homoscedasticity, and if it is different it is called heteroscedasticity (Ghozali, 2012).

Table 3. Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	0.233818	0.225562	1.036599	0.3013

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AP	-0.007987	0.004435	-1.800841	0.0734
AV	-0.000904	0.005278	-0.171306	0.8642
US	0.007474	0.012179	0.613623	0.5403

Source: research results, 2020

Based on the table above, it can be seen that all independent variables in the Glajser test are above 0.05, therefore it can be concluded that there is no symptom of heteroscedasticity in this study.

Multicollinearity

Multicollinearity test aims to test whether in the regression found a correlation between the independent variables (Independent). If the correlation matrix between the independent variables is below 0.8 then there is no multicollinearity, whereas if the correlation between the independent variables is above 0.8 then multicollinearity occurs. The following is a matrix table of the results of multicollinearity testing in this study. Based on the correlation table above, it shows that this model is free from multicollinearity problems by looking at the output between the independent variables in the regression, there is no output that exceeds 0.8.

Autocorrelation

The autocorrelation test aims to test in a model whether or not there is a correlation between the confounding error in period t and the error in period t-1. Ghozali (2012) states that a good regression model is a model that does not have autocorrelation in it.

Table 4. Autocorrelation Test

Durbin-Watson stat	1.887190
Prob(F-statistic)	0.118826

Source: research results, 2021

The autocorrelation test can be seen from the value of Durbin Watson in this study. The value of Durbin Watson in this study is 1.887190. This value is between the tolerance values in the autocorrelation test, namely -2 and 2. Therefore, it can be concluded that this study is free from autocorrelation symptoms, meaning that in this research model there is no interference with the correlation between the time periods used in each variable.

Model Selection Technique

In order for panel data regression analysis to get a good model, a model selection technique is needed. Panel data regression consists of 3 models, namely Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM). The results of the testing of the three models in this study are as follows:

Table 5. Model Selection Technique

VARIABLE	CEM		FEM		BRA KE	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
C	0.401889	1.237800	2.314995	1.854848	0.401889	1.235478
AP	-0.015047	-2.357006	-0.087953	-1.845925	-1.015047	-2.352583
AV	-0.006653	-0.87568	-0.03165	-0.868671	-0.006653	-0.874042

		5	3			
US	-0.001828	-0.104259	-0.032093	-0.628298	-0.001828	-0.104063

Source: Processed Data, 2021

Based on the table above, it can be seen that all the coefficients and significance values for the panel data regression model are based on the Common Effect Model (CEM), Fixed Effect Model (FEM) and Random Effect Model (REM) in this study.

Chow test

Chow (Chow test) is a test conducted to select the best model between the Common Effect Model (CEM) and Fixed effect model (FEM).

Table 6. Chow test

Cross-section Chi-square	3.461992	4	0.4837
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Source: Processed Data, 2021

From the table above, it can be seen that the probability value of the Chi-square Cross-section is 0.4837. That is, if the value of the Chi-square Cross-section > 0.05 then choose the common effect model (CEM).

Hausman test

The next test that will be used is the Hausman test. The Hausman test is a test that compares the Fixed effect model (FEM) and the Random Effect Model (REM).

Table 7. Hausman test

Test Summary	Chi-Sq. Statistics	Chi-Sq. df	Prob.
Random cross-section	3.179099	3	0.3648

Source: Processed Data, 2021

From the table above, it can be seen that the random cross-section probability value is 0.3648. That is, if the value of random cross-section > 0.05 then choose the random effect model (REM).

Lagrange Multiplier Test

Table 7. Lagrange Multiplier Test

	Cross-section	Test Hypothesis Time	Both
Breusch - Pagan	2.281532 (0.1309)	78.24882 (0.0000)	80.53035 (0.0000)

Source: Processed Data, 2021

From the table above, it can be seen that the probability value of Breusch - Pagan is 0.0000. That is, if the value of Breusch - Pagan < 0.05 then choose the random effect model (REM).

Panel Data Regression Estimation

Based on the model selection above, the best model is the Random Effect Model (REM). The results of panel data regression with the Random Effect Model (REM) are as follows:

Table 8. Panel Data Regression

Variable	Coefficient	Std. Error	t-Statistics	Prob.
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C	0.401889	0.325290	1.235478	0.2183
AP	-0.015047	0.006396	-2.352583	0.0197
AV	-0.006653	0.007612	-0.874042	0.3833
US	-0.001828	0.017564	-0.104063	0.9172
R-squared	0.032635			
Adjusted R-squared	0.016146			
Durbin-Watson stat	1.887190			
Prob(F-statistic)	0.118826			

Source: Processed Data, 2021

Based on the table above, the regression equation model that can be arranged in this study is as follows:

$$\text{CRYPTO INVESTMENT RETURN} = 0.401889 - 0.015047 - 0.006653 - 0.001828 + e$$

Based on the above equation, it can be seen that the constant value is 0.401889. This shows that if the Asset Price, Asset Volume and Asset Supply have no value, then the return will be constant at 0.401889. Meanwhile, Asset Price has a negative (not unidirectional) effect on returns with a regression coefficient of -0.015047. This shows that if the Asset Price increases by 1%, it causes the return to decrease by 1.50%.

Meanwhile, the regression coefficient value of the Asset Volume variable is (-0.006653) which shows a negative relationship (not unidirectional) which means that every 1% increase in Asset Volume causes the return to decrease by 0.06%. Meanwhile, the results of the regression coefficient for the Asset Supply variable are (-0.001828) which also shows a negative relationship to returns, where every 1% increase in Asset Supply causes the return to decrease by 0.01%. The coefficient of determination (Adjusted R Square) in this study is 0.016146 or 1.6%. This finding shows that Asset Price, Asset Volume and Asset Supply are able to explain the Return of 1.6% while 98.4% is explained by other variables not analyzed in this study.

Determination Test By Simultaneous (R2 Test)

The coefficient of determination is used to describe the model's ability to explain the variations that occur in the dependent variable. To find out the percentage contribution of the influence of asset price, asset volume, asset supply variables on cryptocurrency investment returns.

Based on table 4.9 above, the coefficient of determination seen from the adjusted R-square value is 0.57, meaning that the variation of the return variable (Y) can be explained by asset price (X1), asset volume (X2), and asset supply (X3).) of 1.6% while the rest (100% - 1.6% = 98.4%) is explained by other variables outside this study.

Partial Test (Statistical t-test)

1. Effect of Asset Price on Return

Based on the test results using the Eviews 10 application, it is known that the tcount value of the Asset Price is 1.235478 with a significant 0.0197. The ttable value in this study calculated by $df = nk$ is 1.65356 with a significance of 0.05. So it can be seen that Asset Price has a negative and significant effect on Return. This is indicated by the results of the tcount (1.235478) < ttable (1.65356) and the significant value is 0.0197 < 0.05. So it can be concluded that the Asset Price variable has a positive and significant effect on Return on cryptocurrency coins.

2. Effect of Asset Volume on Return

Based on the test results using the Eviews 10 application, it is known that the tcount value of the Asset Volume is -0.874042 with a significant 0.3833. The ttable value in this study calculated by $df = nk$ is 1.65356 with a significance of 0.05. So it can be seen that Asset Volume

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has a negative and significant effect on Return. This is indicated by the results of the tcount (-0.874042) < ttable (1.65356) and the significant value is $0.3833 > 0.05$. So it can be concluded that the Asset Price variable has no positive and insignificant effect on Return on cryptocurrency coins.

3. Effect of Asset Supply on Return

Based on the test results using the Eviews 10 application, it is known that the tcount value of the Asset Price is -0.104063 with a significant 0.9172 . The ttable value in this study calculated by $df = nk$ is 1.65356 with a significance of 0.05 . So it can be seen that Asset Price has a negative and significant effect on Return. This is indicated by the results of the tcount (-0.14063) < ttable (1.65356) and the significant value is $0.9172 > 0.05$. So it can be concluded that the Asset Price variable has no positive and insignificant effect on Return on cryptocurrency coins.

4. CONCLUSION

Based on the results of the tests that have been carried out with the title the effect of technical analysis on cryptocurrency investment returns with the 5 (five) highest market capitalization in Indonesia. So the conclusion of this research is as follows The asset price partially has a positive and significant effect on the return on cryptocurrency investment in Indonesia, so H_0 is rejected. Asset volume partially has no positive and insignificant effect on cryptocurrency investment returns in Indonesia, then H_0 is accepted. Asset supply partially has no positive and insignificant effect on cryptocurrency investment returns in Indonesia, then H_0 is accepted. With careful analysis and good money management can minimize the losses received Adding other variables that can affect investment returns. Based on the research results and conclusions above, suggestions can be given regarding the development of cryptocurrency investment in Indonesia. Investors should pay attention to the technical influence of a crypto coin before investing their capital in a coin, because technical influence factors can indicate the amount of return and risk that investors receive for their investment. Traders should do technical analysis or other analysis on a crypto coin before buying the coin they want to trade, because cryptocurrency, both from the influence of fundamental factors. future researchers can extend the period in order to obtain better and more accurate results. Further researchers can add the sample under study not only devoted to the five highest market caps.

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