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INVESTOR REACTION TO THE ANNOUNCEMENT OF FIRST COVID-19 VACCINATION IN INDONESIA

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ABSTRACT

The COVID-19 pandemic has had a huge impact around the world and presents unprecedented challenges to the health sector. Vaccination programme is a solution to suppress the spread of COVID-19. The purpose was to explain the reaction of the capital market to the announcement of the first COVID-19 vaccination in Indonesia by focusing the differences in abnormal return and trading volume activity before and after the event of vaccination programme. The research method used is quantitative method by secondary data analysis with event study. The event date in this research was January 13rd, 2021 when Indonesia began its nationwide COVID-19 vaccination programme. This event study took a sample of 17 companies in healthcare sector listed on Indonesia Stock Exchange. The event period used was 14 days, 7 days before and 7 days after the announcement of the first COVID-19 vaccination in Indonesia. This research uses descriptive statistical techniques, normality test (one-sample kolmogorov-smirnov test), and paired sample t-test. The results of the paired sample t-test show that there is a significant difference between the abnormal return before and after the announcement of the first COVID-19 vaccination in Indonesia. However, there is no significant difference of trading volume before and after the announcement of the first COVID-19 vaccination in Indonesia.

Keywords: *Abnormal return, event study, healthcare sector, trading volume activity, vaccination*

1. INTRODUCTION

Corona Virus Disease 2019 was first detected in China at the end of 2019. In a relatively short time, the COVID-19 outbreak quickly spread to all corners of the world. The government has made various efforts to overcome the COVID-19 pandemic, one of which is by carrying out vaccine testing based on Minister of Health Regulation (Permenkes) Number 84 of 2020. According to Dian et al. (2021), the government announced the starting point for implementing national vaccination in Indonesia on January 13, 2021. The first recipient of the vaccination was the President of the Republic of Indonesia, which was then given to community representative figures. Implementing vaccinations for the President and community representatives is the government's effort to convince the public of the safety of the COVID-19 vaccine. After the first vaccination was implemented, the government began distributing vaccines in bulk and for free in Indonesia. Vaccination is the most effective way to reduce the death rate due to COVID-19 by activating the body's immune system against a disease.

According to Fajarwati et al. (2020), events can be used as information can come from the company internal and external events. Sources of events from within the company can be dividend announcements and announcements about profits. Sources of events external to the company can be economic events and non-economic events. Economic events can take the form of value movements in foreign exchange. On the other hand, non-economic events can include political news and pandemics. Events originating from external companies and including non-economic factors that have hit throughout the world are the COVID-19 pandemic. One event related to the COVID-19 pandemic that has the potential to cause a

reaction in the capital market is the announcement of a mass vaccination program. One way to determine the extent of the capital market reaction as a result of an event can be seen from the level of abnormal returns before and after the event. According to Agrivina et al. (2022), the reaction of capital market participants seen through abnormal returns means that if the actual return is higher than the expected return, there is a positive abnormal return that provides capital gains. Vice versa, if the actual return is lower than the expected return, there is a negative abnormal return, resulting in capital loss. Apart from looking at the level of abnormal returns, the capital market response to an event can be analyzed through the level of trading volume activity. According to Kinasih et al. (2022), changes in trading volume describe stock market activity and the results of decisions taken by investors.

Many indicators can be used to analyze market reactions to the announcement of an event. However, this research only uses abnormal returns and trading volume activity as indicators to analyze the capital market reaction to an event. Health industry companies listed on the Indonesia Stock Exchange in 2021 were chosen as the objects of this research because the health sector received a lot of influence when the COVID-19 vaccination program was implemented as an effort to reduce the rate of spread of COVID-19 in Indonesia.

According to the previous studies, there are still the difference results. Research by Ibrahim et al. (2022) shows differences in abnormal returns and trading volume before and after the COVID-19 vaccination in healthcare and banking sector companies. Sahputra et al. (2022) disclose differences in abnormal returns before and after the announcement of the first case of COVID-19 in Indonesia, and there was no difference in trading volume before and after the announcement of the first case of COVID-19 in Indonesia. Therefore, this research was conducted to re-examine the reaction of the Indonesian capital market to non-economic events.

2. LITERATURE STUDY

Signaling Theory

According to Kinasih et al. (2022), signal theory assumes investors will act based on the information received. A signal is a clue for investors to know what actions the company is taking at a specific prospect. Complete, relevant, accurate and timely information is necessary for investors to make investment decisions.

Investors will categorize this information into positive signals or negative signals. The conclusions from the analysis of this information will later become the basis for investors to make offers and requests in the capital market. If investors interpret this information as a positive signal, then investors will increase offers and reduce the number of purchases, lowering share prices. Likewise, if investors interpret this information as a negative signal, the number of purchases will increase and offers will be reduced, pushing share prices up on the market.

Prospect Theory

According to Ayudiastuti (2021), prospect theory reveals that each individual tends to give a higher assessment of certain results than uncertain ones. Prospect theory explains that in making a decision, humans tend to focus on the prospect, namely the prospect of profit and the prospect of loss. The implementation of prospect theory can be reflected in the actions

taken by investors because of their risk tolerance which can influence investment decision making. For individuals in a profitable position, generally some people tend to avoid risk. Meanwhile, if the person is in a loss position, some people generally look for risk. Prospect theory explains how humans think about risks in the face of profits will be very different from human attitudes regarding risks in the face of losses.

Efficient Market Theory

The Efficient Market Hypothesis is defined as a market whose security prices represent all available relevant information. Information that can influence investor decision-making can be in the form of past information, published information, or private information. According to Agrivina et al. (2022), there are three primary forms of market efficiency based on information availability. An efficient market in weak form indicates that current security prices reflect past trading information, such as previous stock prices. An efficient market in semi-strong form means that current security prices reflect past information and circulating public information. An efficient market in a strong form indicates that security prices reflect public information and private information.

First COVID-19 Vaccination

According to Dian et al. (2021), the government officially started the COVID-19 vaccination program on January 13, 2021. President Joko Widodo was the first recipient of the COVID-19 vaccine made by Sinovac Biotech Ltd. Officials, religious leaders, health workers, business representatives, artists, workers, and market traders also underwent the first COVID-19 vaccination at the Presidential Palace. The event of injecting President Joko Widodo with the COVID-19 vaccine marked the start of a mass vaccination program to tackle the pandemic in Indonesia. Vaccination is crucial to breaking the chain of transmission of the COVID-19 virus. The vaccination program is implemented to create a person's immune system so that it can fight bacteria or viruses that cause infection.

The COVID-19 vaccination program is also helpful in encouraging the formation of herd immunity. This is important because some people cannot receive vaccines for specific reasons. There are several criteria for people who should not or are not prioritized to receive the COVID-19 vaccine, including people under the age of 18 and people who suffer from certain diseases, such as diabetes or uncontrolled high blood pressure. With the presence of the COVID-19 vaccine, not only do vaccine recipients get protection, but people who do not have immunity to the Coronavirus are also protected.

Abnormal Return

The abnormal return level can be calculated based on the actual and the expected return level. The level of abnormal returns can be obtained from the difference between actual and expected returns. According to Ibrahim et al. (2022), investors will make transactions during an event period to get a profit above normal.

Based on signaling theory, information regarding the announcement of the first vaccination can be used as a signal. If the first COVID-19 vaccination event causes an actual return that is smaller than the expected return, then this event will provide a negative signal for the capital market. Based on prospect theory, investors will analyze the shares to be purchased with relevant information to determine the company's prospects in the future. Based on

efficient market theory, in the form of a semi-strong market, all public information is reflected in share prices. So, testing the form of a semi-strong market can be analyzed by announcing the first COVID-19 vaccination event in Indonesia, which is classified as public information.

H_1: There are differences in abnormal returns before and after the first COVID-19 vaccination in Indonesia in healthcare industry companies listed on the Indonesia Stock Exchange.

Trading Volume Activity

Trading volume activity (TVA) is an essential indicator for investors, which shows the number of securities traded in a certain period. According to Fadhilah et al. (2021), calculating the level of trading volume activity requires two pieces of data, namely the number of shares of an entity that have been successfully sold and the number of shares outstanding in an entity at a specific time. High trading volume indicates the amount of market interest in an asset. The higher the number of shares traded on the capital market, it reflects investors' confidence in the company's performance and ultimately causes share prices to increase.

Based on signaling theory, if the first COVID-19 vaccination event contains a signal for investors, there will be a capital market reaction through changes in the value of trading volume activity. Based on prospect theory, individuals tend to give a higher assessment of securities that have better and more secure future opportunities. The higher the trading volume activity for a security in the capital market, the more investors believe in the company's prospects. The announcement of the first COVID-19 vaccination became an event that was widely reported in electronic and print media. So, trading volume activity can be an indicator for examining the capital market in a semi-strong form.

H_2: There are differences in trading volume before and after the first COVID-19 vaccination in Indonesia in healthcare industry companies listed on the Indonesia Stock Exchange.

Framework of Thinking

The following explains the thinking framework based on the research model and explanation provided above (See Figure 1 below).

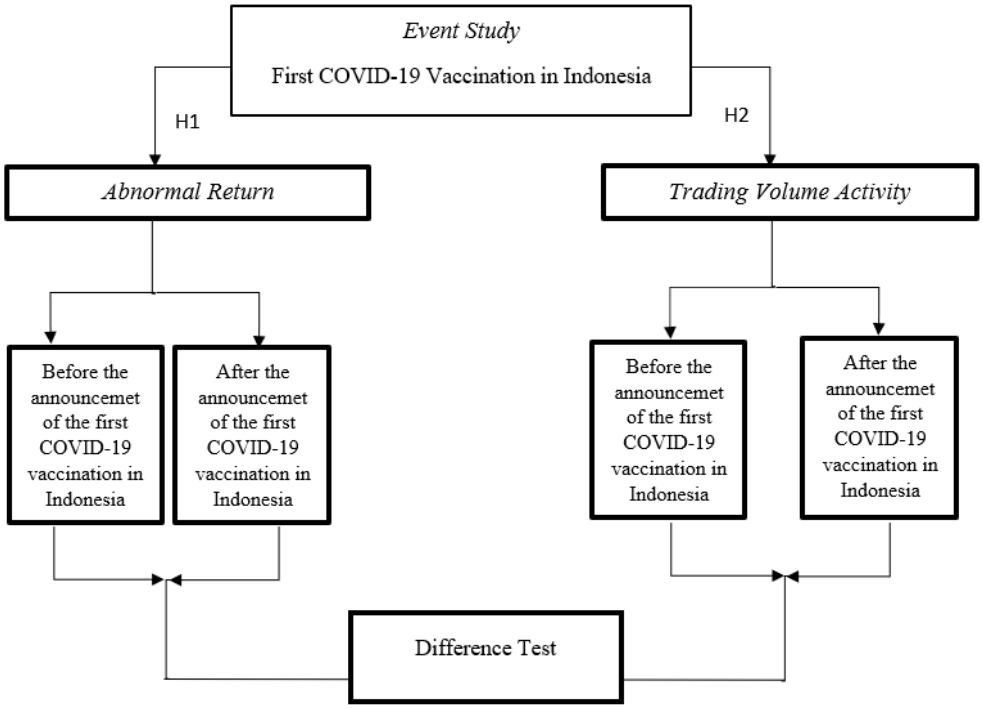

Figure 1 Framework of Thinking

3. RESEARCH METHOD

This research uses a quantitative descriptive design. A descriptive research design is a study designed to provide a systematic and accurate explanation of an empirical phenomenon regarding the relationship between variables. This research uses the event study analysis method, commonly used to determine the emergence of abnormal returns and trading volume activity following the announcement of an event. This event study is a form of testing semi-strong form market efficiency derived from a public information announcement. Movements in stock prices and trading volume occur due to the reaction to the absorption of information relevant to the capital market. Changes in stock prices can be tested through the level of abnormal return. On the other hand, changes in trading volume can be measured through the level of trading volume activity used to measure market reactions to event announcements.

This research takes an event study on the announcement of the first COVID-19 vaccination event in Indonesia. In this event study, January 13, 2021 (t_0) is set as the benchmark in this event study research, which is the date of the announcement of the first COVID-19 vaccination in Indonesia. The observation period for this event study is 14 stock exchange days. The event period used is 7 days before the announcement of the first COVID-19 vaccination in Indonesia (t_{-7}) and 7 days after the announcement of the first COVID-19 vaccination in Indonesia (t_{+7}).

Determining the event window for 14 days is expected to show the capital market reaction to the events that occur and can show the speed of market reaction to the announcement of the COVID-19 initial vaccination event in Indonesia. The number of days in the event period is determined with the aim of facilitating the observation of the rapid capital market reaction around the publication date and avoiding confounding effects.

The population in this study is all shares of health industry companies listed on the Indonesia Stock Exchange in 2021, namely 17 healthcare industry companies. In this research, the sampling technique used was non-probability sampling with a purposive sampling technique. The criteria used when selecting samples for this research were healthcare industry companies listed on the Indonesia Stock Exchange in 2021.

Seventeen healthcare sector companies successfully met the predetermined sampling criteria. Calculations of the level of abnormal returns and trading volume activity from the 17 healthcare companies that are the research sample will be collected with the help of Microsoft Excel. After that, processing was carried out on the level of abnormal returns and trading volume activity of all research samples with the use of the SPSS version 29 program.

The operational variables in this event study are only to calculate the level of abnormal return and the level of trading volume activity. The operational variables in this event study can be described in table 1.

Table 1. Results of The Proxy for Each Variables

Variable	Scale	Measurement	Ref
Abnormal Return	Ratio	**Abnormal Return** = actual return – expected return Actual return = $\frac{Price\ of\ security\ (t) - Price\ of\ security\ (t-1)}{Price\ of\ security\ (t-1)}$ Expected return = $\frac{Composite\ stock\ price\ index\ (t) - Composite\ stock\ price\ index\ (t-1)}{Composite\ stock\ price\ index\ (t-1)}$	Fadhilah et al. (2021)
TVA	Ratio	$\mathbf{TVA} = \frac{The\ number\ of\ company\ shares\ traded\ in\ period-t}{The\ number\ of\ company\ shares\ outstanding\ in\ period\ t}$	Sahputra et al. (2022)

4. RESULT AND DISCUSSION

Based on the results of sample selection, tests were carried out on differences in abnormal return levels and trading volume activity levels before and after the announcement of the first COVID-19 vaccination in Indonesia at 17 healthcare industry companies.

The Descriptive statistical test of the abnormal return and trading volume activity variables will produce more precise information to clarify the characteristics of the data in question. The results of the descriptive statistical tests are presented in Table 2 as follows:

Table 2. The Result of Descriptive Statistical Test

	Abnormal return before event	Abnormal return after event	Trading volume activity before event	Trading volume activity after event
Mean	0.01030603	-0.00951074	0.00955256	0.00453864
Median	0.00090757	-0.00614844	0.00821622	0.00396031
Maximum	0,061644	0.000153	0.017851	0.008083

Minimum	-0.011378	-0.031992	0.001756	0.002896
Standar deviation	0.024939058	0.012438923	0.005661468	0.001694791

Source: SPSS 29 Data Processing Result

In Table 2, shows that the average abnormal return before the first COVID-19 vaccination in Indonesia was positive and that the average abnormal return after the first COVID-19 vaccination in Indonesia was negative. This shows that shares in the healthcare health sector experienced a decline in abnormal returns after the first COVID-19 vaccination in Indonesia.The results of descriptive statistics also show that the average trading volume activity before the first COVID-19 vaccination in Indonesia was 0.00955256 and that the average trading volume activity after the first COVID-19 vaccination in Indonesia was 0.00453864. This indicates that health sector shares experienced a decline in trading volume activity after the first COVID-19 vaccination in Indonesia.

This research uses a normality test with the one-sample Kolmogorov-Smirnov method to fulfill the requirements for hypothesis testing. The basis for decision-making is that if the count is significant > 0.05, then the data is normally distributed. If the calculated significant results are < 0.05, then the data is classified as non-normally distributed data. The results of the normality test using the one-sample Kolmogorov-Smirnov method are presented in Table 3 as follows:

Table 3. The Result of One-Sample Kolmogorov-Smirnov

	Abnormal return before event	Abnormal return after event	Trading volume activity before event	Trading volume activity after event
Asymp. Sig	0.200	0.050	0.200	0.051

Source: SPSS 29 Data Processing Result

Based on the significance value of the abnormal return variable before and after the first COVID-19 vaccination in Indonesia, which shows a value not smaller than 0.05, the abnormal return before and after the event is normally distributed. With the results of the one sample Kolmogorov-Smirnov normality test on abnormal returns showing that abnormal returns before and after the first COVID-19 vaccination are normally distributed, to analyze whether or not there is a difference in the level of abnormal returns before and after the event, paired sample t-test hypothesis testing is carried out.

Based on the significance value of trading volume activity before and after the first COVID-19 vaccination in Indonesia, which shows a value not smaller than 0.050, the trading volume activity variable before and after the event is normally distributed. With the results of the normality test of the one sample Kolmogorov-Smirnov method on trading volume activity, which shows that the trading volume activity variables before and after the first COVID-19 vaccination are normally distributed, then to analyze whether or not there is a difference in the level of trading volume activity before and after the event, hypothesis testing is carried out with the paired sample t-test.

Hypothesis testing in this event study serves as the main key in analyzing whether or not there are differences in abnormal returns and trading volume activity before and after the first COVID-19 vaccination in Indonesia in healthcare industry companies. The results of hypothesis testing using the paired sample t-test method on the abnormal return variable are presented in Table 4 as follows:

Table 4. The Result of Paired Sample t-Test on Abnormal Return

	95% Confidence interval of the difference		t	df	Significance	
	Lower	Upper			One-sided p	Two-sided p
ARBefore - ARAfter	0.000107202	0.039526350	2.460	6	0.025	0.049

Source: SPSS 29 Data Processing Result

The results of hypothesis testing with the paired sample t-test method on the abnormal return variable obtained a significance value of 0.049. Based on the significance value of the abnormal return variable, which shows a value smaller than 0.05, H_1 is accepted.

Hypothesis testing with paired sample t-test is also carried out on the trading volume activity variable. The results of hypothesis testing with the paired sample t-test method on the trading volume activity variable are presented in Table 5 as follows:

Table 5. The Result of Paired Sample t-Test on Trading Volume Activity

	95% Confidence Interval of the Difference		t	df	Significance	
	Lower	Upper			One-sided p	Two-sided p
TVABefore - TVAAfter	-0.000036846	0.010064691	2.429	6	0.026	0.051

Source: SPSS 29 Data Processing Result

The results of hypothesis testing with the paired sample t-test method on the trading volume activity variable obtained a significance value of 0.051. Based on the significance value of the trading volume activity variable, which shows a value greater than 0.05, H_2 is rejected.

Differences in the Level of Abnormal Returns Before and After the First Vaccination of COVID-19 in Indonesia

The paired sample t-test shows a significant value of 0.049, lower than the predetermined significant value (0.049 <0.050). There is a significant difference in abnormal returns before and after the COVID-19 vaccination in Indonesia. The results of testing the paired sample t-test hypothesis also show that the first COVID-19 vaccination event in Indonesia contains information, so there is a reaction in the capital market to this information.

The descriptive statistical test results found that the average abnormal return after the first COVID-19 vaccination moved in a negative direction. The event of injecting the first COVID-19 vaccine in Indonesia shows that non-economic events can produce a signal that causes changes in abnormal returns. The first COVID-19 vaccination event caused a negative

abnormal return, providing a negative signal for the capital market. This is because the COVID-19 vaccination program is also carried out for free, so healthcare sector companies cannot reap high profits from the vaccination program. This can also be caused by private health companies not obtaining a license to sell the COVID-19 vaccine freely, resulting in decreased investor interest in investing in healthcare sector companies.

Investors will analyze healthcare sector stocks to find out the prospects for stock returns in the future. The decrease in abnormal returns after the COVID-19 vaccination occurred because most investors saw that the prospect of healthcare stock prices could fall again. Therefore, investors are not caught up in the euphoria of the first COVID-19 vaccination program and choose to realize their profits faster.

This study's results align with Ibrahim et al. (2022), which found a significant difference in abnormal returns before and after the COVID-19 first vaccination event. Another study that obtained the same results was Purnami et al. (2022), which found differences in abnormal returns before and after first COVID 19 vaccine injection in Indonesia.

Differences in the Level of Trading Volume Activity Before and After the First Vaccination of COVID-19 in Indonesia

In the paired sample t-test, a significant value of 0.051 was obtained, higher than the predetermined significant value (0.051> 0.050). This shows no significant difference in trading volume activity between before and after the COVID-19 vaccination in Indonesia. The results of testing the paired sample t-test hypothesis also show that the first COVID-19 vaccination event in Indonesia has not been able to influence the information needs of market participants to result in a significant difference in the level of trading volume before and after the first COVID-19 vaccination.

The level of trading volume activity does not show a significant difference because the level of trading volume before and after the first COVID-19 vaccination that is generated still tends to be low, so it cannot provide a statistically significant difference. The descriptive statistical test results found that the average trading volume before the first vaccination of COVID-19 in Indonesia was 0.00955256, and after the first COVID-19 vaccination in Indonesia was 0.00453864. The decrease in trading volume occurred due to negative signals from the first COVID-19 vaccination on January 13, 2021. Investors analyze that the return on healthcare stocks in the future is not very promising with the implementation of the free COVID-19 vaccination program.

The decline in trading volume after the first COVID-19 vaccination in Indonesia can also be caused by investors not seeing high prospects for securities with better and guaranteed future opportunities. The semi-strong market form indicates that the current stock price already reflects past information and public information circulating. The decline in trading volume in healthcare sector stocks occurred because market participants reflected on the significant increase in these stocks, which tended to be short-term during the COVID-19 pandemic. Although the trading volume activity of healthcare stocks moved down, the market reaction was not strong enough to produce a significant difference between trading volume before and after the event.

The results of this study align with the research of Fadhilah et al. (2021), which found no differences in trading volume before and after the announcement of the arrival of the Sinovac

vaccine in Indonesia. As for other studies that obtained the same results, namely the research of Sahputra et al. (2022), which found no differences in trading volume before and after the announcement of the first case of COVID-19 in Indonesia.

5. CONCLUSIONS AND SUGGESTIONS

Conclusions

Based on the results of the above research, it can be concluded that there are differences in abnormal returns before and after the first COVID-19 vaccination in Indonesia in healthcare industry companies listed on the Indonesia Stock Exchange. This indicates that Indonesia's first COVID-19 vaccination event contains information for investors, so there is a capital market reaction through the emergence of significant differences in abnormal returns before and after the event.

However, there is no difference in trading volume activity before and after the first COVID-19 vaccination in Indonesia in healthcare industry companies listed on the Indonesia Stock Exchange. The level of trading volume activity before and after the event did not show a significant difference. The difference in the level of trading volume activity that occurred still tended to be low, so it could not produce a statistically significant difference.

This study has several limitations. This limitation is an important thing that must be considered and considered for further research. Some of the limitations in this study are: a) the study only uses the level of abnormal returns and trading volume as indicators in analyzing market response; b) the event study period only lasts 14 days; c) the research sector is only limited to health sector companies on the Indonesia Stock Exchange; and d) the study only uses the market-adjusted model in determining the expected return level.

Suggestions

Based on the results and limitations of this study, there are several suggestions for various parties. This study has the following suggestions: a) investors and prospective investors are expected to consider various additional information in making stock trading decisions so that they are not rash in making decisions that are affected by information confusion; b) Managers and owners of companies in the health sector can add considerations and always be careful in making decisions and policies during difficult times such as the COVID-19 pandemic; c) future researchers can develop other variables, such as bid-ask-spread to analyze the capital market response, use objects with a broader scope, and use different methods to determine expected returns, such as mean-adjusted or market models.

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REFERENCES

Agrivina, D. & Komara, E. F. (2022). Analisis abnormal return, trading volume activity, dan market capitalization sebelum dan sesudah vaksinasi COVID-19 pada sektor infrastuktur. *SAINS: Jurnal Manajemen dan Bisnis*, 15, 1-14.

Ayudiastuti, L (2021). Analisa pengaruh keputusan investasi mahasiswa. *Jurnal Ilmu Manajemen*, 9, 1138-1149.

Dian Erika Nugraheny, D. E. & Icha Rastika, Dimulainya vaksinasi COVID-19 di Indonesia, Kompas, Jakarta, 2021.

Fadhilah, R. I. & Yunita, I. (2021). Analisis reaksi pasar modal terhadap peristiwa pengumuman awal vaksin sinovac masuk ke Indonesia. *E-Proceeding of Management*, 8, 4358-4366.

Fajarwati, P. Y. & Nurasik (2020). Capital market reaction analysis before and after bank Indonesia's decision regarding interest rates. *Academia Open*, 3, 1-14.

Ibrahim, A. & Lasmanah (2022). Analisis perbandingan abnormal Return dan trading volume activity sebelum dan sesudah dilakukannya vaksinasi COVID-19 di Indonesia. *Bandung Conference Series: Business and Management*, 2, 396-403.

Kinasih, H. W. & Laduny, M. F. (2022). Analisis komparatif abnormal return, cumulative abnormal return dan trading volume activity: event study kedatangan vaksin sinovac. *Ekuivalensi: Jurnal Ekonomi Bisnis*, 7, 84-98.

Peraturan Menteri Kesehatan (Permenkes) Nomor 84 Tahun 2020. Peraturan menteri kesehatan nomor 84 tahun 2020 tentang pelaksanaan vaksinasi dalam rangka penanggulangan pandemi corona virus disease 2019.

Purnami, N. K. S. & Devi, S. (2022). Reaksi pasar modal terkait penyuntikan vaksin COVID 19 pertama Indonesia pada perusahaan sektor farmasi di Bursa Efek Indonesia. *Jurnal Ilmiah Akuntansi dan Humanika*, 12, 156-162.

Sahputra, A., Lindrianasari, Dharma, F., & Amelia, Y. (2022). Analisis perbandingan abnormal return dan trading volume activity sebelum dan sesudah diumumkannya kasus pertama COVID-19. *Jurnal Akuntansi Bisnis*, 15, 29-40.