

The Relationships between Abnormal Return, Trading Volume Activity and Trading Frequency Activity during the COVID-19 in Indonesia

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Abstract

This study aims to determine whether there are differences in the average abnormal return, trading volume activity, and trading frequency activity in pharmaceutical stocks before and after the announcement of the first case of the coronavirus (COVID-19) in Indonesia. The sample was selected using a purposive sampling method and collected as many as nine pharmaceutical companies listed on the Indonesia Stock Exchange during 2019–2020. The data used in this study were secondary data in the form of daily data on stock closing prices, Composite Stock Price Index (IHSG), stock volume trading, number of shares outstanding, and stock trading frequency. This study was an event study with an observation period of 14 days, namely seven days before and seven days after the announcement of the coronavirus's first positive case in Indonesia. Hypothesis testing employed the paired sample *t*-test method. Based on the results, it was found that there was no difference in the average abnormal return of pharmaceutical stocks before and after the announcement of the first case of COVID-19. However, there was a difference in the average trading volume activity and the average trading frequency activity in pharmaceutical stocks before and after the announcement of the first case of COVID-19.

Keywords: Abnormal Return, Trading Volume Activity, Trading Frequency Activity

JEL Classification Code: C22, G10, G15

1. Introduction

At the end of 2019, the whole world was shocked by the threat of an outbreak of the coronavirus disease, commonly known as COVID-19. The COVID-19 outbreak first appeared in Wuhan City, Hubei Province, China, in December 2019 and in a short time, the COVID-19 virus had become an epidemic and continued to spread to other countries. The virus was designated as a pandemic by the World Health Organization (WHO) on March 11, 2020, which signifies that it is spreading widely in different countries and continents at the same time and threatening many people in the world.

When other countries rushed to close their doors after the coronavirus emerged in Wuhan, Indonesia was still opening its doors as wide as possible to foreign tourists, even providing discounts that triggered an increase in foreign tourist arrival in Indonesia. The stimulus was given to give more impetus to Indonesia's tourism sector, which in recent months has been sluggish due to the outbreak of the coronavirus or COVID-19. However, this stimulus actually worried the public about the spread of the coronavirus in Indonesia.

Concern over the coronavirus's spread actually occurred in early March, or more precisely on March 2, 2020, when President Jokowi announced directly that two Indonesian citizens were positive for the coronavirus in the country. After this incident, the government periodically provided updates regarding the number of people who had tested positive for coronavirus, were negative for coronavirus, were declared cured, and died. Achmad Yurianto, who previously served as Secretary of the Directorate General of Disease Prevention and Control (P2P), Ministry of Health, was appointed as the government's spokesman for the handling of COVID-19.

Positive cases of the coronavirus in Indonesia continued to increase. On March 9, 2020, the number of positive cases of the coronavirus in Indonesia increased rapidly,

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from the previous one, on March 8, 2020, only six people, then increased to 19 people or an increase of 217%. On March 15, 2020, positive cases of the coronavirus reached 117 people. The increasing number of positive cases of the coronavirus had put pressure on the Indonesian Capital Market. It can be seen that the Jakarta Composite Index (JCI) experienced a bearish trend. On February 20, 2020, the JCI was still at the closing rate of 5,942. Meanwhile, on March 11, 2020, the JCI was already at the closing rate of 5,154, indicating that the JCI lost 788 points or decreased by 13.27% in a month.

However, behind the coronavirus spread, it is assumed that it positively impacted the pharmaceutical sector. This is because when a disease outbreak or pandemic occurs in a country, all pharmaceutical products, such as medicines, will be highly sought after by the public. Research conducted by Chen et al. (2009) and Chong et al. (2010) uncovered that the pharmaceutical sector was positively affected by the disease outbreak (SARS). Besides, WHO and the government stated that it is mandatory to wear masks during the coronavirus pandemic. As a result the demand for masks in the community had greatly increased; even, the price per box could reach IDR 200,000, from the usual IDR 40,000 to IDR 50,000. Moreover, people are always urged to wash their hands, so that the demand for hand sanitizers had also increased and had made hand sanitizers scarce. Pharmaceutical companies are also required to provide personal protective equipment for doctors & nurses who handle COVID-19 in hospitals. From this, it is possible that this year, the income from the entire pharmaceutical industry will increase and impact the firm value. Firm value is an investors' perceptions of a company's success level, often associated with share prices (Mulyana & Adidarma, 2020).

The announcement of the first positive case of the coronavirus sparked market sentiment. The existence of this sentiment will undoubtedly affect the movement of pharmaceutical stock prices, which tend to experience a downward or bearish trend. However, during the announcement of the first positive case of the coronavirus in Indonesia, pharmaceutical stocks' moved in a different direction. Some moved in an upward or downward trend, and some remained stagnant. Pharmaceutical stocks had varied movements. INAF and KAUF shares underwent significant changes with an increase in prices exceeding 10%, while DVLA & MERK shares experienced insignificant changes, with an increase limited to no more than 3%. The shares of KLBF, PEHA, PYFA, SIDO, and TSPC also did not experience significant changes but were inclined in a downward direction. If the announcement of the first positive case of the COVID-19 contains information, it should be able to create a reaction indicated by a change in the price of the relevant share, which is reflected in the abnormal

return. Wang et al. (2013) affirmed that every time there is a disease outbreak, it will result in a significant abnormal return for pharmaceutical companies (biotechnology). If the announcement contains information that will impact a particular share, then the abnormal return tends to change after the announcement is made. It aligns with Mahendra and Rasmini's (2019) research, which revealed a significant difference in average abnormal returns before and after an event. However, it is inversely proportional to Ikram and Nugroho (2014), which asserted that there was no difference in average abnormal returns before and after an announcement.

The information content absorbed by the market will be used by investors to determine their investment decisions so that investors will strive to obtain complete and accurate information (Suganda, 2018). In other words, if investors know essential information that affects a particular share, in the sense of important information about the company's profitability level, investors will react by buying or selling those shares. Because the focus of investors is the profitability of the company, the greater the level of profitability, the bigger will be the effect on the value of the company, and in the end, investors will flock to invest in the company so that there will be changes in stock trading activities (Ainulyaqin et al., 2019). Share trading activity can be seen from the share volume and share frequency. However, at the time of the announcement of the first positive case of COVID-19 in Indonesia, overall, there was no significant change in the volume and frequency of pharmaceutical stocks.

On February 20, 2020, the total trading volume of pharmaceutical shares was 27,021,900 shares and continued to increase until the announcement of the coronavirus's positive cases in Indonesia on March 2, 2020, amounting to 80,640,600 shares or an increase of 198.43%. However, after the announcement of the first positive case of the coronavirus in Indonesia, the movement in the total trading volume of pharmaceutical shares tended to stagnate even though on March 5, 2020, it had increased quite sharply, to as many as 124,338,500 shares. In the end, on March 11, 2020, the total trading volume of pharmaceutical shares was only 60,111,600 shares or a 25.46% decrease compared to the volume of pharmaceutical shares on March 2, 2020, when the first positive case of the coronavirus was announced in Indonesia.

Assuming the announcement of the first positive case of COVID-19 contained information - in that case, there should be a significant relationship between the movement of stock volume (trade volume) on an event (Garkaz et al., 2014) and can create a reaction indicated by a volume change in the relevant shares reflected in the trading volume activity. It is consistent with the research results carried out by

Satria and Supatmi (2013), which stated that there are differences in trading volume activity before and after the event. On the other hand, the research results from Feranita (2014) declared that there is no difference in the average stock trading volume activity before and after the event.

Like the total volume of pharmaceutical stocks, pharmaceutical stocks' total frequency did not also experience the same thing. It can be seen that on February 20, 2020, the total trading frequency of pharmaceutical stocks was 7,218 times, and the frequency continued to increase until the announcement of the first positive case of the coronavirus in Indonesia on March 2, 2020, by as much as 17,217 times or an increase of 138.53%. However, after the announcement of the case, the total frequency of pharmaceutical stocks tended to decline, although, on March 5, 2020, it had increased as in volume, and on March 11, 2020, the total frequency of pharmaceutical stocks was 12,090 times, decreasing compared to when the positive cases were announced coronavirus in Indonesia as many as -29.78%.

If the announcement of the first positive case of COVID-19 contains information that will impact a stock, investors will react to buy or sell the shares so that there will be a change in frequency activity reflected in the trading frequency activity. Same as research conducted by Supriadi et al. (2017), it was stated that there was a significant difference in the frequency of stock trading between, before and after the event. In contrast to the results from Retno et al. (2017), it was found that there was no significant difference in the average trading frequency before and after the event.

Behind the positive sentiment that hit the pharmaceutical industry during the first positive case of COVID-19 in Indonesia, it should have been able to directly influence the market reaction in all pharmaceutical stocks, marked by changes in stock prices reflected in abnormal returns and stock trading activities reflected in the trading volume activity and trading frequency activity. However, in reality, not all pharmaceutical stocks have changed significantly. The difference in the above research results is possible because each event contains different information. Even so, with this research gap, it is necessary to carry out further research related to the event study, especially an outbreak of a disease for which there is still little research. Therefore, the authors are interested in researching whether there is a significant market reaction in pharmaceutical stocks to the announcement of the coronavirus's first positive case of COVID-19 in Indonesia.

This study aims to determine whether there are differences in the average abnormal return, trading volume activity, and trading frequency activity in pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia.

2. Literature Review and Hypothesis Development

2.1. Abnormal Return

An abnormal return is a difference (positive or negative) from the actual return around the event window with the expected return. This abnormal return is empirically used to test the semi-strong market's efficiency, namely in the study of events. The market is said to be inefficient if one or several market participants can enjoy abnormal returns over a long period (Alam et al., 2020). An abnormal return can be written in the following formula (Hartono, 2017). If there are no events, the actual return tends not to be different from the expected return. However, if an event is expected to cause changes in cash flow in the future, the market will react to the announcement so that the actual return tends to be different from the expected return (Dang & Tran, 2019; Liu & Lee, 2020). Therefore, events that result in abnormal returns tend to be significantly different from zero (Tandelilin, 2010).

2.2. Trading Volume Activity

Trading volume is often used as a tool to analyze the movement of stock because trading volume actually describes the meeting between supply and demand for stock transactions. Trading volume is also used to find out whether a trend will continue or reverse. The very high trading volume activity on the exchange can be interpreted that the market is in good shape. An increase in trading volume tends to be followed by an increase in stock prices, which indicates a bullish trend. High trading volume also means that the stock is in great demand by investors. Investors' stock in-demand assumes that the stock will provide high returns to the investor (Azis et al., 2015). According to Wismar'ien in the journal by Riyadi et al. (2019), trading volume activity is carried out by comparing the number of shares of a company traded in a certain period with the total number of shares outstanding of that company during the same period. Trading volume activity is used to observe capital market reactions through trading volume movements when the capital market is studied (Mahendra & Rasmini, 2019). The market reaction to an event can be seen from the change in trading volume activity. It is assumed that if there is a significant change in trading volume activity between the pre-event and post-event, it indicates that the market reacts to the event.

2.3. Trading Frequency Activity

Market conditions in stock trading can usually be seen from the trading frequency. When stocks are trading in a busy situation or the trading frequency is high, people usually say

the market is bullish. Conversely, people will refer to this condition as weak or bearish when the trading frequency is low. Of course, there is a normal market between the two extreme conditions, namely when the trading frequency is stagnant (Widoatmodjo, 2008). In the capital market activity, stock trading frequency activity is one of the elements that is an indicator to evaluate the market's reaction to information (Taslim & Wijayanto, 2016) and in a journal by Diyanah et al. (2017). The indicator in using trading frequency activity is the number of stock trading frequencies in that period.

2.4. Previous Research

Several previous studies were employed in this study to show research gaps. The results of Chandra (2015) indicated that there was an abnormal return for each event during the presidential election. However, there was no significant difference before and after an event of abnormal returns and trading volume activity. Putra and Putri (2018), research results showed a difference in the average abnormal return and the average trading volume before and after the announcement of Donald Trump's victory as President of the United States. In contrast, the results of Wulan and Sulasmiyati (2017) revealed that there was no significant difference in average abnormal return, average trading volume activity, and average trading frequency activity before and after the announcement of the stock buyback. Besides, Hidayat (2017) research results exposed a difference between the volume of trading transactions and the frequency of trading transactions before and after changes in trading time on the Indonesian stock exchange, but this difference has not been significant

Referring to the description of the research conducted, the following hypotheses are derived:

H1: *There is a difference in the average abnormal return of pharmaceutical stocks before and after the announcement of the coronavirus's first positive case (COVID-19) in Indonesia.*

H2: *There is a difference in the average trading volume of pharmaceutical stocks before and after the announcement of the coronavirus's first positive case (COVID-19) in Indonesia.*

H3: *There is a difference in the average trading frequency of pharmaceutical stocks before and after the announcement of the coronavirus's first positive case (COVID-19) in Indonesia.*

3. Research Methods

This research was a type of comparative research with a quantitative approach, which was an event study in nature.

This research's events were the announcement of the coronavirus's first positive case of COVID-19 in Indonesia. This research focused on testing the market reaction to these events by observing changes in abnormal returns, trading volume activity, and trading frequency activity before and after the announcement of the coronavirus's first positive case of COVID-19 in Indonesia. Changes in abnormal returns, trading volume activity, and trading frequency activity before and after the event indicate a market reaction and vice versa.

This study's sample segment was ten publicly listed pharmaceutical companies listed on the Indonesia Stock Exchange (IDX) from 2019–2020. Sampling in this study was performed by purposive sampling. The following are the criteria and the sample selection process used in this study:

1. Pharmaceutical companies listed on the Indonesia Stock Exchange (IDX) during the window period, namely seven days before and seven days after the announcement of the first positive case of COVID-19 in Indonesia. (10)
2. Pharmaceutical companies whose shares were not in a "suspend" condition or a temporary suspension of trading on the IDX during the window period (testing time), namely seven days before and seven days after the announcement of the first positive case of COVID-19 in Indonesia. (1)
3. The company did not carry out corporate actions, such as dividend distribution in cash or shares, rights issue, stock split, reverse stock, merger, and acquisition during the window period (testing time), namely seven days before and seven days after the announcement of the first positive case of COVID-19 in Indonesia. (0)

Based on the sample selection, it can be seen that of all pharmaceutical companies listed on the IDX during the window period (testing time), namely seven days before and seven days after the announcement of the first positive case of COVID-19 in Indonesia, only nine companies could be used as research samples.

The event date set was March 2, 2020, with an estimated test time (window period) of seven days before and seven days after the announcement of the first positive case of COVID-19 in Indonesia, where $t-7$ was on February 20, 2020, and $t+7$ was on March 11, 2020. The data used were secondary data, including the closing price of shares, the Composite Stock Price Index (IHSG), stock trading volume, number of shares outstanding, and frequency of stock trading, which were taken daily and obtained from the Indonesia Stock Exchange website (www.idx.co.id). For data that was normally distributed, the data analysis method employed was the paired sample t -test, and for data that was not normally distributed, the Wilcoxon signed-rank test was utilized with the help of the Statistical Package for the Social Science program version 24 for Windows (SPSS 24).

4. Results

4.1. Normality Test

The normality test aims to test whether, in the regression model, the variables are normally distributed or not (Viciwati & Pulungan, 2015). In this study, a way to detect whether the residuals were normally distributed or not was by using a statistical method, namely the Kolmogorov-Smirnov test. The following shows the normality test results using the Kolmogorov-Smirnov method.

Based on Table 1, it can be seen that the average abnormal return variable with data seven days before the announcement of the first positive case of COVID-19 in Indonesia had a Kolmogorov-Smirnov significance of $0.044 < 0.05$ so that the data obtained had an abnormal distribution. Meanwhile, the variable average abnormal return with data seven days after the announcement of the first positive case of COVID-19 in Indonesia had a Kolmogorov-Smirnov significance of $0.200 > 0.05$ so that the data obtained had a normal distribution. In connection with one of the data that would be used for further hypothesis testing, there was not normally distributed data, namely data seven days before the announcement, so that Wilcoxon Signed Rank Test could be employed.

The variable average trading volume activity with data seven days before the announcement of the coronavirus's first positive case of COVID-19 in Indonesia had a Kolmogorov-Smirnov significance of $0.200 > 0.05$ so that the data obtained had a normal distribution. Meanwhile, the variable average trading volume activity with data seven days after the announcement of the first positive case of COVID-19 in Indonesia had a Kolmogorov-Smirnov significance of $0.165 > 0.05$ so that the data obtained had a normal distribution. In connection with the two data needed to perform the next hypothesis test, data obtained were normally distributed, so parametric testing with the paired sample *t*-test could be used.

Table 1: Normality Test Results

Variable	Data	Kolmogorov-Smirnov Significance	Decision
Average Abnormal Return	Before	0.044	Abnormal
	After	0.200	Normal
Average Trading Volume	Before	0.200	Normal
	After	0.165	Normal
Average Trading Frequency Activity	Before	0.200	Normal
	After	0.123	Normal

The variable average trading frequency activity with data seven days before the announcement of the coronavirus's first positive case of COVID-19 in Indonesia had a Kolmogorov-Smirnov significance of $0.200 > 0.05$ so that the data obtained had a normal distribution. Meanwhile, the variable average trading frequency activity with data seven days after the announcement of the first positive case of COVID-19 in Indonesia had a Kolmogorov-Smirnov significance of $0.123 > 0.05$ so that the data obtained had a normal distribution. In connection with the two data needed to test the next hypothesis, it was obtained normally distributed data so that it could use parametric testing with the paired sample *t*-test.

4.2. Discrimination Test Against Average Abnormal Return

In connection with the normality test carried out and showed that one of the required data had an abnormal distribution, a discrimination test was performed on the average abnormal return using the Wilcoxon Signed Rank Test.

This research revealed that the average abnormal return seven days before and after the announcement of the first positive case of COVID-19 in Indonesia had a Z value of -1.014 and Asymp. Sig (2-tailed) of $0.310 > 0.05$, then hypothesis 1 was rejected. It signified no difference in the average abnormal return of pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia. It also denoted that the announcement of the coronavirus's first positive case gave no reaction to pharmaceutical stocks in the seven days before and after the announcement of the first positive case of COVID-19 in Indonesia.

However, when viewed from the average (mean) abnormal return, it could be seen that an average of seven days before the announcement of the first positive case of COVID-19 in Indonesia showed a negative value, while the average seven days after, the announcement, showed a positive value, where the average abnormal return before the announcement was -0.0090823 lower than the average abnormal return after the announcement of 0.0148153 . These results indicated that announcements tended to be considered positive by market players, or there was a good sentiment in pharmaceutical stocks over the announcement of the coronavirus's first positive case in Indonesia.

4.3. Discrimination Test Against Average Trading Volume Activity

In connection with the normality test carried out and showed that all the required data had a normal distribution, the discrimination test was conducted on the average trading volume activity using the paired sample *t*-test.

Table 2: Results of Paired Sample *T*-Test for Trading Volume Activity

Data Pair	Mean	<i>t</i>	Sig. <i>t</i> (2-tailed)
Seven days before the announcement of the first positive case for the coronavirus	0.0002984	-3.720	0.010
Seven days after the announcement of the first positive case for the coronavirus	0.0011568		

Table 2 demonstrates the average trading volume for seven days before and after the announcement of the coronavirus's first positive case of COVID-19 in Indonesia, which had a *t*-value of -3.720 and sig. *t* (2-tailed) of $0.010 < 0.05$, then hypothesis 2 was accepted. It suggested a difference in the average trading volume of pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia. It also indicated that the announcement of the first positive case of the coronavirus in Indonesia signaled the trading volume activity of pharmaceutical companies' shares in the capital market to react in the seven days before and after the announcement of the coronavirus's first case of COVID-19 in Indonesia.

Moreover, if seen from the average (mean) of trading volume activity seven days after, it was greater; namely, 0.0011568 compared to the average trading volume seven days before the announcement of the first positive case of the coronavirus in Indonesia, which was 0.0002984 . These results pointed out an increase in the trading volume in pharmaceutical stocks seven days before and after the announcement of the first case of COVID-19 in Indonesia.

4.4. Discrimination Test Against Average Trading Frequency Activity

In connection with the normality test carried out and showed that all the required data had a normal distribution, the discrimination test was conducted on the average trading frequency activity employing the paired sample *t*-test. The average trading frequency activity seven days before and after the announcement of the coronavirus's first positive case of COVID-19 in Indonesia had sig. *t* (2-tailed) of $0.004 < 0.05$, then hypothesis 3 was accepted. It implied a difference in the average trading frequency of pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia. It also denoted that the announcement of the first positive case of the coronavirus in Indonesia gave a signal to the trading frequency activities of pharmaceutical companies in the capital market to react in the seven days before and after the first case announcement of COVID-19 in Indonesia.

Judging from the average (mean) trading frequency activity seven days after, it was greater, namely, 1770.73 compared to the average trading frequency activity seven days before the announcement of the coronavirus's first positive case in Indonesia, which was 922.86 . These results revealed an increase in the trading frequency activities in pharmaceutical stocks seven days before and after the announcement of the first case of COVID-19 in Indonesia.

5. Discussion

5.1. The difference in Average Abnormal Return

The results showed no difference in the average abnormal return of pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia. It was noteworthy that the announcement of the first positive case of the coronavirus did not give a meaningful reaction to pharmaceutical company investors in the capital market to react in seven days before and after the announcement of the first positive case COVID-19 in Indonesia. There was no difference in the abnormal return, perhaps, because an abnormal return was found before the window period in the study, so there was no difference in abnormal returns before and after the announcement of the first positive case of the coronavirus in Indonesia.

This may have happened because of information leakage. According to Oktaviana and Wahyuni (2011), the market is said to be inefficient if there is information leakage. It should be noted that the coronavirus case had been published since December 2019, and it seemed that investors had predicted that the coronavirus pandemic would enter Indonesia. It caused some market players to use this information to obtain abnormal returns before this research window period.

Even though the coronavirus's first positive case in Indonesia was an unpredictable event, issues regarding the spread of the coronavirus continued to spread in the community, and the possibility (probability) of the coronavirus spreading in Indonesia was very high. The noise (issue) was followed up by market players before the announcement of the coronavirus's first positive case in Indonesia, even before the window period specified in this study. Supposedly, market participants should react to an announcement after the announcement was published. However, what happened was that the market had reacted before the announcement was published so that the market reaction to pharmaceutical stocks on the announcement of the first positive case of the coronavirus in Indonesia could be declared not precise.

Concerning the previous research results, this study's results are in accordance with the research results conducted by Ikram and Nugroho (2014), Chandra (2015), Larasati and Nuraya (2018), and Feranita (2014), which confirmed that there was no significant difference in the average abnormal return before and after the event study.

5.2. The difference in Average Trading Volume

The results revealed a difference in the average trading volume of pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia. It suggested that the announcement of the first positive case of the coronavirus gave a signal, and there was a reaction to the trading volume activity of pharmaceutical stocks for the seven days before and after the announcement of the first positive case of COVID-19 in Indonesia.

Associated with the signaling theory, investors assumed that when the first positive case of the coronavirus was announced in Indonesia, it could be both bad news and good news for the pharmaceutical companies' prospects in the future; however, investors tried to speculate on pharmaceutical stocks. It is because pharmaceutical companies are believed to be one of the industries that have received a splash of profit behind Indonesia's coronavirus pandemic case. The trading volume level of pharmaceutical stocks also increased, as seen in the average trading volume of pharmaceutical stocks before and after the announcement of the coronavirus's first positive case of COVID-19 in Indonesia.

Regarding the previous research results, this study's results corroborate with the research results carried out by Satria & Supatmi (2013), Safira & Simon (2016), Mahendra & Rasmini (2019), and Hidayat (2017), which verified that there were significant differences on the average trading volume before and after the study event.

5.4. The difference in Average Trading Frequency Activity

The results uncovered a difference in the average trading frequency activity of pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia. It confirmed that the announcement of the first positive case of the coronavirus gave a signal, and there was a reaction to the frequency of trading in pharmaceutical stocks for the seven days before and after the announcement of the first positive case of COVID-19 in Indonesia.

It is related to the research results on trading volume activity above. If the level of trading volume increases, it will undoubtedly affect increasing the trading frequency. It indicated that since there has been a positive case of the coronavirus in Indonesia, pharmaceutical stocks' liquidity level has increased. This increase in liquidity was possible because most pharmaceutical stock prices were low and easily accessible to retail investors. Besides, when viewed from the expectation theory expressed by Victor H. Vroom, the strength that motivates a person to work actively in doing his job depends on the reciprocal relationship between what is wanted and needed from the work results (Sudjono et al., 2016). In this case, investors expected returns from pharmaceutical stocks when the first positive case of the coronavirus in Indonesia

was announced, so they tried to speculate about buying and selling pharmaceutical stocks. It could be seen from the increase in the average trading frequency of pharmaceutical stocks before and after the announcement of the first positive case of COVID-19 in Indonesia.

About the previous research results, this study's results are in agreement with the research results done by Safira and Simon (2016), Supriadi et al. (2017), Diyanah (2017), and Hidayat (2017), which asserted that there was a significant difference in the average trading frequency activity before and after the event study.

6. Conclusion

Based on the results of the research and discussion described, several conclusions could be drawn as follows:

1. There was no difference in the average abnormal return of pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia. It indicated that the announcement of the coronavirus's first positive case did not give a meaningful signal to investors, and there was no reaction in pharmaceutical stocks.
2. There was a difference in the average trading volume of pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia. It signified that the announcement of the first positive case of the coronavirus gave a signal, and there was a reaction to the volume of trading activity in pharmaceutical stocks.
3. There was a difference in the average trading frequency of pharmaceutical stocks before and after the announcement of the first case of COVID-19 in Indonesia. It suggested that the announcement of the first positive case of the coronavirus gave a signal, and there was a reaction to the frequency of trading in pharmaceutical stocks.

Based on this study's results, the following observations provide some useful suggestions for the public/investors as market players and further researchers as academics, including:

1. Investors are expected to be/are already investing in stocks and not to pay attention to a current condition, but still pay attention to the company's fundamentals. Besides, investors can also combine stock analysis with technical analysis by paying attention to stock trading activities, such as the volume and frequency of stock trading.
2. Investors are advised not to just speculate without doing a specific analysis. Before investing/trading stocks, an investment/trading plan is needed so that investors can predict which stocks will provide optimal returns.
3. Researchers need to consider the market characteristics to be studied to determine the length of the observation period, so that the length of the observation period eventually used, accurately indicates the object condition under study.

4. Future researchers are expected to expand research indicators to calculate market reactions to specific events, such as using market capitalization, bid-ask spread, etc. If the next researchers want to try using abnormal return, it is hoped that they can use other abnormal return calculation methods, such as the market model, mean-adjusted model, or capital asset price model (CAPM) as a comparison. Moreover, it is recommended to use a more actual event than this research, such as the implementation of the PSBB policy in Jakarta, the end of the PSBB, the implementation of the New Normal policy, and so on.

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