

## Comparison and relationship of returns: Case of technology and healthcare sectors

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### ABSTRACT

The Covid-19 pandemic can have both positive and negative impacts. The technology sector and the health sector are sectors that have experienced significant increases since the pandemic. The objective of this study is to examine the comparison and relationship between firms engaged in the technology sector and the health sector in Indonesia. The results of the analysis over the period 17 June 2021 to 3 June 2022 show that the returns of both sectors are not significantly different. Empirically, this study proves that stock returns of both sectors are not unidirectional and have an insignificant relationship.

Keywords: returns; technology; healthcare; Covid-19  
JEL Classification: G11; G12; G14

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## 1. Introduction

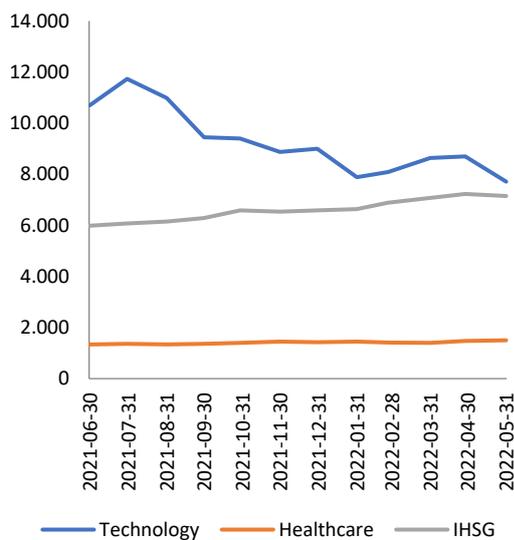
Uncontrolled and unwise use of technology can have a negative impact on the mental health of society in general. According to Rahman (2016), the role of technology can result in the emergence of negative behavior in adolescents so that it requires the role of the community to prevent or reduce the occurrence of this. However, apart from the negative impact, Mayeni et al. (2019) also find that progress in the technology sector is also very beneficial for society, especially in the field of education.

In addition, advances in the technology sector are also very helpful and beneficial for the progress of the health sector. Putri and Sukihananto (2018) prove that advances in the technology and information sector have an important role and are very helpful to the health sector in optimizing services to the public. Apriliana

et al. (2021) also prove that advances in information technology in the 4.0 era can directly improve services in the health sector and most importantly can educate the public about the importance of health. Komalasari (2020) states that the role of information technology during the Covid-19 pandemic is greatly assist the community in carrying out their work and medical interests. Munawar (2021) also finds that the role of information technology was very significant for the health sector, especially at the start of the Covid-19 pandemic.

Since the start of the Covid-19 pandemic in 2020, the trend for the movement of the technology sector index has begun to decline from June 2021 to May 2022 but is still above the Jakarta Composite Index (IHSG), while the health sector index has been in constant motion during this period. Figure 1 illustrates the

trend of the movement of the technology and health sector indices during the period June 2021 to May 2022. Based on the existing phenomena, the purpose of this study is to examine the relationship between stock returns from companies in the technology sector and the health sector.



**Gambar 1. Tren indeks**

## 2. Literature review

### 2.1. The circumstance of the technology sector

According to Hidayat and Jubaedah (2022), stock price movements in the capital market of listed firms in the technology sector in the period 2017 to 2020 tend to be influenced by profitability. This finding indicates that the condition of the technology sector is still quite stable because companies tend to use less debt so as to avoid debt interest expenses (Hidayat & Jubaedah, 2022). Empirically, the stability of the technology sector is supported by the findings of Saputra and Aminda (2022) which prove that debt does not play an important role in determining stock price movements in the capital market, especially in the period 2016 to 2020.

In the period from 2016 to 2020, Oktaviani and Patimah (2021) also prove that the return on investment of technology

sector companies tends to positively affect stock prices in the capital market. These findings indicate that return on investment is the basis for the consideration of investors in their investment decisions. Khasanah and Suselo (2022) find that between 2019 and 2020, the liquidity of firms in the technology sector plays an important role in determining the movement of stock prices in the capital market. In 2021, many firms in Indonesia have switched to digital-based business models during the Covid-19 pandemic, thereby having a positive impact on the stock return performance of companies in the technology sector (Rahmentio et al., 2022). This is supported by Rahardika et al. (2022) who found that the technology sector experienced an increase in the range from November 2018 to October 2021 which was likely due to the Covid-19 pandemic.

### 2.2. The circumstance of the health sector

Since the start of the Covid-19 pandemic, the shares of firms in the health sector have experienced a significant increase (Asbanian & Setiawan, 2021). This condition is also confirmed by Putri and Yulfiswandi (2022) who show that in the period from 2015 to 2020 the Covid-19 pandemic significantly increased the availability of funds to meet short-term obligations. However, Putri and Yulfiswandi (2022) also find that the Covid-19 pandemic had significantly reduced the net profit margin associated with total sales and net profit. In contrast, Mustikaningrum and Herawati (2022) also find that the financial performance of the health sector was reflected in Economic Value Added (EVA) and Market Value Added (MVA) before and during the Covid-19 pandemic. Mustikaningrum and Herawati (2022) prove that in the period 2020 to 2021, the value of EVA and MVA is higher than in the period 2018 to 2019 or the era before the pandemic.

Hartati et al. (2022) also prove that the condition of the health sector was still quite stable during the Covid-19 pandemic. Hartati et al. (2022) show that liquidity, solvency, and asset activity still have the same performance as before the pandemic, while profitability has increased. Similar conditions are also found by Puspabhita et al. (2022) where the return on equity, net profit margin, and gross profit margin do not experience significant differences from performance before the pandemic occurred, although they experienced a slight decrease from 2018 to 2020.

### 3. Research method

This study uses secondary data for the period June 17 2021 to June 3 2022 which comes from the Indonesia Stock Exchange. The samples taken are companies registered in the technology sector and the health sector. The firms in the technology sector that were taken are DCI Indonesia Tbk (DCII) and Zyrexindo Mandiri Buana Tbk (ZYRX) while the health sector are Kimia Farma Tbk (KAEF) and Kalbe Farma Tbk (KLBF). The data in this study is the daily share closing price which is used to calculate returns with the following formula.

$$R_t = (P_t - P_{t-1})/P_{t-1} \quad (1)$$

$R_t$  is the return of period  $t$ ,  $P_t$  is the price in period  $t$ , and  $P_{t-1}$  is the price in period  $t-1$ . This study uses mean difference test and the correlation analysis at a significance of 5%. The formula to test the correlation noted as follows.

$$r = \frac{\sum(x-\bar{x})(y-\bar{y})}{\sqrt{\sum(x-\bar{x})^2 \sum(y-\bar{y})^2}} \quad (2)$$

### 4. Result and discussion

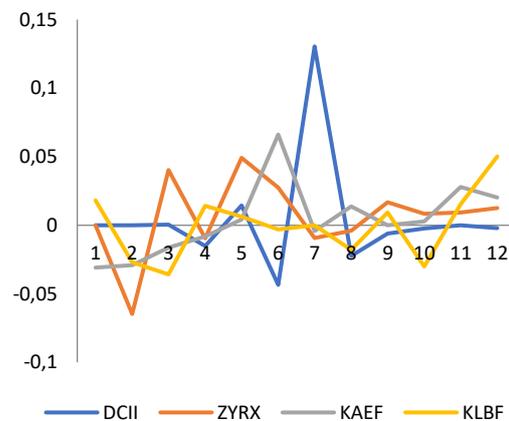
Table 1 presents descriptive statistics of the returns of 4 firms. The highest mean is obtained from KLBF engaged in the health sector. However, the skewness of all

firms shows a positive value. These results indicate that these firms have low returns, especially during the Covid-19 pandemic. In addition, the kurtosis of all firms also has a positive value indicating that the frequency of low returns is quite high.

**Table 1. Descriptive statistics**

	N	Mean	Skewness	Kurtosis
DCII	233	-0.0017	1.191	4.445
ZYRX	233	-0.0005	1.874	9.404
KAEF	233	-0.0015	2.471	14.932
KLBF	233	0.0008	0.368	2.689

Confirmation of the results of descriptive statistics is shown in the trend graph of the movement of returns. Figure 1 illustrates the movement of returns from sample within observation period. The trend of returns shows that value obtained is not far from the zero point so it tends to be low.



**Figure 1. Stock returns trend**

In order to check the normality of returns, the data is compiled in a panel consisting of returns for companies in the technology sector and the health sector. Table 2 presents the results of the normality test using the Kolmogorov-Smirnov test. The test results show that the significance value is below 5% so it can be concluded that the data is not normally distributed.

**Table 2. Normality test**

		<b>Return</b>
N		932
Normal Parameters	Mean	-0.0007
	Std. Deviation	0.03080
	Absolute	0.151
Most Extreme Differences	Positive	0.151
	Negative	-0.095
	Kolmogorov-Smirnov Z	4.603
Asymp. Sig. (2-tailed)		0.000

This study continues the differential test analysis of returns on the technology sector and the health sector. Based on the normality test, the mean difference test uses a nonparametric approach or in this case uses the Mann-Whitney test. Table 3 shows that return from the technology sector and the health sector have

**Table 4. Correlations test**

		<b>Technology</b>	<b>Healthcare</b>
<b>Technology</b>	Pearson Correlation	1	-0.016
	Sig. (2-tailed)		0.724
	N	466	466
<b>Healthcare</b>	Pearson Correlation	-0.016	1
	Sig. (2-tailed)	0.724	
	N	466	466

## 5. Conclusion

Advances in the technology sector have proven to be very helpful and beneficial for the progress of the health sector. However, this study shows that the return performance of the two sectors in the capital market is not related to each other. Empirically, this study proves that during the Covid-19 pandemic, both the technology sector and the health sector tended to have non-optimal return performance. The results of the analysis show that the two sectors have returns that are almost the same or not significantly different. This study also proves that the returns from the two sectors have a non-

insignificant difference in the Covid-19 pandemic era.

**Table 3. Mean difference test**

	<b>Return</b>
Mann-Whitney U	102835.500
Wilcoxon W	211646.500
Z	-1.402
Asymp. Sig. (2-tailed)	0.161

The final stage of this study is hypothesis testing using the Pearson correlation test. Table 4 shows that the correlation is -0.016 with a significance level of 0.724. These results indicate that the relationship between returns from the technology sector and the health sector is not unidirectional and not significant. In addition, the correlation values obtained tend to prove that the relationship between the two returns is very weak.

directional or even insignificant relationship, especially during the observation period during the Covid-19 pandemic.

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