

Pandemic Covid-19 Impact on Technology and Telecommunication Industry: Evidence from Indonesia Listed Company

Mulyono^{1*}

¹Management Department, BINUS Business School Undergraduate Program, 11480 Bina Nusantara University, Indonesia

Abstract. This research aims to determine pandemic Covid-19 on the profitability of technology and telecommunication companies listed on the Indonesia Stock Exchange. To measure a company's profitability using return on equity ratio (ROE). This research applies the event study method before and after the Indonesian government's announcement of the Covid-19 case for the first time. The data processed consists of financial statements in 2019 and 2020 obtained from the Indonesia Stock Exchange and the company's website. Data processing handling with SPSS statistics software. The results concluded a significant effect of the Covid-19 pandemic on company profitability in the technology and telecommunications industry. A total of 65.79% of the sample of companies experienced a decrease in profitability.

1 Introduction

The Covid-19 pandemic that hit the world had an impact on the economies of various countries. To cope with it, governments across the globe implemented various emergency measures, such as lockdowns, testing and quarantine, travel restrictions, and economical packages. The government's policy of implementing social distancing directly negatively affects stock market returns because it reduces economic activity. However, social distancing policies have an indirect positive impact in lowering confirmed cases of Covid-19 [1].

The spread of the coronavirus has brought down economic activity globally, causing the closure of financial markets, businesses, corporate offices, and other social activities. In addition, the rapid rate of spread of the virus and increasing uncertainty led to flight consumption and investment into safety. The decline in economic activity is getting worse because people are asking to stay at home, the severity is starting felt in various economic sectors [2].

The Government of Indonesia first announced the case of patients infected with Covid-19 on March 2, 2020, then at the end of the year, patients infected with Covid-19 are close to one million. The Government of Indonesia adopts various policies to prevent the spread of Covid-19, such as large-scale social restrictions, campaigning for the use of masks, and providing social assistance to people in need. The reduced social activity caused a decrease in economic activity. Based on the Central Bureau of Statistics report, Indonesia's economy during 2020 decreased by -2.07%; the economic decline was the first since the economic downturn in 1998.

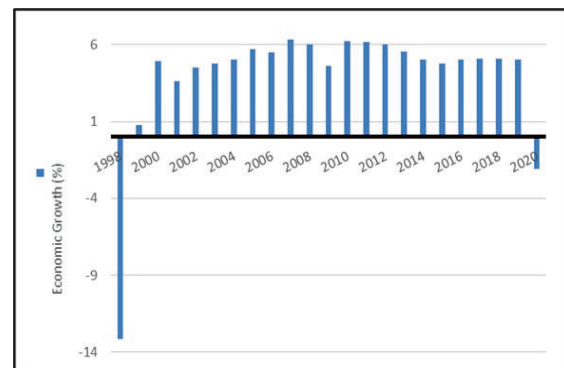


Fig. 1. Indonesia economic growth 1998 – 2020 (source: Indonesia central bureau of statistics).

The Covid-19 pandemic also felt on capital markets in various major countries, including Indonesia. The coronavirus outbreak caused investors pessimistic sentiment and concerns about uncertainty resulting in a rapid fall in stock market indexes. Countries in the Asian region experienced a more negative return compared to other countries. Public health emergencies have the effect of decreasing economic activity that can transmit results to the stock market; this is because the stock market serves as a barometer of investor expectations and confidence in the economic outlook [3].

To prevent the spread of the Covid-19 disease, the government has imposed a large-scale social restriction policy in many areas. This program has replaced many socio-economic activities of the people, such as traffic restrictions, control on the number of visitors to shopping centres, and the closure of various recreational parks. The government decided to implement a policy to

* Corresponding author: mulyono@binus.ac.id

work from home, making workers doing job activities outside the office.

To anticipate and reduce the spread of Covid-19, companies are innovating and changing the way they do business. The work done in the office became less relevant and doing work from home suddenly became necessary. The need to work from home has driven the digital transformation of employees, and employees must have the ability to adapt to changes in the working environment. Since its inception, the pandemic has forced mass adoption of telecommuting into a critical business change [4].

The government supports work from home for public servants and employees of private companies. In addition, the government also encouraged online learning for school and university students. Internet quota assistance is provided for students who need to support online learning activities. Pandemic has empowered people, in general, to work and learn from home with the support of technology information.

People facing new realities to continue daily routines activity, the need for telecommunication infrastructure services becomes crucial to keep the relationship between individuals and companies running. A significant global surge in telecommunications and information technology has been observed recently in employment, online education, entertainment, and other fields. It shows that the telecommunications industry has become the key to maintaining connectivity and productivity during the pandemic [5].

Companies in the technology and telecommunication industry provide connectivity services to support people's online activities. The change in activity from face-to-face to online-based makes researchers want to identify the impact of the Covid-19 pandemic on companies engaged in technology and telecommunication. The research contribution is to develop studies on the impact of the Covid-19 pandemic on companies in the technology and telecommunication industry listed on the Indonesia Stock Exchange.

1.1 Objectives

The increasing need for online communication and connectivity has a good impact on the prospects of technology and telecommunication companies. However, the declining economy also affects declining business activity and decreased purchasing power of the people, so that it can potentially decrease the revenue of technology and telecommunication companies. The research purpose is to provide evidence of the pandemic Covid-19 on technology and telecommunication company profitability. The study examines the impact before and after the first announcement of Covid-19 by the government on technology and telecommunication company profitability listed at the Indonesia Stock Exchange.

2 Literature review

The idea of an informationally efficient capital market leads to the application of robust research

methodologies. According to the Efficient Market Hypothesis (EMH), the stock market divides into three, namely the weak form, the semi-strong form, and the strong form [6]. In the weak form, the stock price reflects all trading information such as past volume and prices. In the semi-strong form that stock prices reflect all information available to the public. In the strong form, the stock price reflects all related information, including insider information. Therefore, all forms of the market state that stock price movement should reflect available information [7].

An event study is an empirical financial research technique that allows researchers to assess the effect of a particular event on the company [8]. Event studies conduct to analyze the global disease outbreak's impact on stock markets. Using an event study to investigate the stock market reaction to the pandemic Covid-19 will allow stakeholders better access the capital market in the future [9]. Research conducted on the Australian stock market analyzed data for various industries. The method used is an event study based on the official announcement of the Covid-19 outbreak in Australia, concluding that the index for listed companies in the pharmaceutical, health, food, and telecommunications industries shows good performance. In contrast, the transportation industry shows poor performance. The telecommunications index has positive performance supported by increasing demand for work from home and distance learning [10].

Research on the impact of the Covid-19 outbreak on the economy and capital market in the United States concluded that stock prices in the real estate, energy, and utility sectors experienced a decline. In contrast, the health, telecommunications, and information technology sectors experienced relatively better conditions. Meanwhile, asset prices in forward-looking equity markets indicate a significant decline in company profits from the economic activity, which is under pressure due to the pandemic [11].

The company's financial performance is an evaluation of the efforts made to obtain the company's business goals. There is difficulty getting information about objective performance data from a company because companies usually do not want to release this information. Therefore, to measure the performance of the company can use the measurement method based on financial data published by the company, such as profitability ratio or return on equity.

Financial ratio analysis is using to evaluate whether a company has good or poor financial performance. Financial ratio analysis compares a specific number in an account with other numbers from a company's financial statements. Return on equity is the most commonly used ratio to represent profitability in measuring the company's financial performance [12]. The higher the return on equity, the better a company uses its capital to generate profit [13].

Return on equity (ROE) measures the company's financial ratio, which shows how much net profit obtain when measured from the owner's capital. Return on equity is a measure of the results obtained by shareholders throughout the year because contributing profits to shareholders are the company's goal [14, 15].

Thus, ROE becomes a measure of the company's actual performance results. The ROE formula is as follows $ROE = \text{Net income} / \text{Total equity}$ [16]. The hypothesis proposed in the study is:

H0: The Covid-19 pandemic has no significant effect on company profitability in the technology and telecommunications industry.

H1: The Covid-19 pandemic has a significant effect on company profitability in the technology and telecommunications industry.

3 Methods

This study uses the event study method to analyze the impact of pandemic Covid-19 on company profitability. The date of the event uses the first Covid case announcement by the Indonesian government. Companies sampled in this study are companies included in the technology and telecommunications industry listed on the Indonesia Stock Exchange.

Based on Figure 2 the steps taken in this study are as follows, the first step in hypothesis testing identifies the first Covid-19 announcement published by the Indonesian government; the next step is determining the periods before and after, which is the year 2019 period before announcement, and 2020 is the period after announcement. Then, make a statistical comparison of company profitability 2019 with 2020 to assess the significant difference between before and after the announcement. The base hypothesis decision-making uses a 5% level of significance. If the probability value is less than 0.05, then hypothesis null (H0) is rejected; if the probability value is more than 0.05, then hypothesis null (H0) is accepted. The research model proposed in this study is:



Fig. 2. Research model.

4 Data collection

Return on equity data is obtained from the company financial statements. The financial statements used are 2019 and 2020. The type of data used is secondary data obtained from the Indonesia Stock Exchange and the company websites. Company data listed in the technology and telecommunications industry on the Indonesia Stock Exchange are as follows.

Table 1. Technology and telecommunications company.

No.	Code	Company Name	No.	Code	Company Name
1	ATIC	PT Anabatic Technologies Tbk	20	ZYRX	PT Zyraxindo Mandiri Buana Tbk
2	CASH	PT Cashlez Worldwide Indonesia Tbk	21	BALI	PT Bali Tourindo Sentra Tbk
3	DCHI	PT DCI Indonesia Tbk	22	BTEL	PT Bakrie Telecom Tbk
4	DIVA	PT Distribusi Voucher Nusantara Tbk	23	CENT	PT Centratama Telekomunikasi Indonesia Tbk
5	DMMX	PT Digital Mediatama Maxima Tbk	24	EXCL	PT XL Axiata Tbk

6	EDGE	PT Indointernet Tbk	25	FREN	PT Smartfren Telecom Tbk
7	ENVY	PT Envy Technologies Indonesia Tbk	26	GHON	PT Ghon Telekomunikasi Indonesia Tbk
8	HDDT	PT Hensel Davaest Indonesia Tbk	27	GOLD	PT Visi Telekomunikasi Infrastruktur Tbk
9	KIOS	PT Kioson Komersial Indonesia Tbk	28	IBST	PT Inti Bangun Sejahtera Tbk
10	LMAS	PT Lmas Indonesia Makmur Tbk	29	ISAT	PT Indosat Tbk
11	MCAS	PT M Cash Integrasi Tbk	30	JAST	PT Jasmita Telekomindo Tbk
12	MLPT	PT Multipolar Technology Tbk	31	KBLV	PT First Media Tbk
13	NFCX	PT NFC Indonesia Tbk	32	LCKM	PT LCK Global Kedaton Tbk
14	PGJO	PT Tourindo Guide Indonesia Tbk	33	LINK	PT Link Net Tbk
15	TECH	PT Indosterling Technomesia Tbk	34	OASA	PT Protech Mitra Perkasa Tbk
16	GLVA	PT Galva Technologies Tbk	35	SUPR	PT Solusi Tunas Pratama Tbk
17	LUCK	PT Sentral Mitra Informatika Tbk	36	TBIG	PT Tower Bersama Infrastructure Tbk
18	MTDL	PT Metrodata Electronics Tbk	37	TLKM	PT Telkom Indonesia (Persero) Tbk
19	PTSN	PT Sat Nusapersada Tbk	38	TOWR	PT Sarana Menara Nusantara Tbk

Source: Indonesia Stock Exchange (www.idx.co.id)

Before testing the hypothesis, then tested the normality of the collected data. The normality test uses the Kolmogorov – Smirnov test to assess whether the data is normally distributed or not. Decision-making on the normality test uses a significance level of 5%. The null hypothesis (H0) decision accepts if the probability value is greater than 0.05; the conclusion is that the data has a normal distribution. The null hypothesis (H0) decision reject if the probability value is less than 0.05; the conclusion is that the data has not a normal distribution.

5 Results and discussion

5.1 Numerical results

Secondary data is obtaining from the Indonesia Stock Exchange website, and each company's website then processed the data using SPSS statistical data processing software. Discussion of the data processing results presented descriptive statistics, test of normality, and hypothesis test of dependent samples.

Table 2. Descriptive statistics.

Description	N	Mean	Std. Deviation	Minimum	Maximum
Before	38	16.04	25.33	0.05	150.04
After	38	1.78	32.82	-132.90	70.06

Table 2 shows that the sample used is 38 companies; in 2019, the average ROE is 16.04%, and the standard deviation is 25.33%, with a minimum ROE value of 0.05 is BTEL, and a maximum of 150.04 is ZYRX. In 2020 the average ROE was 1.78%, and the standard deviation is 32.82%, with a minimum ROE value of -132.90 is ATIC, and a maximum of 70.06 is ZYRX.

Table 3. Test of normality result.

Description	Kolmogorov-Smirnov		
	Statistic	Df	Sig.
Before	.264	38	.000
After	.245	38	.000

The test of normality is carried out before the hypothesis test to confirm the data used in the research has a normal distribution. In the test of normality result on table 3 for data before and after the announcement of Covid-19 has a significance value less than 0.05, the conclusion is that the data has no normal distribution. After performing the test of normality, the researcher

used Wilcoxon Signed Ranks test to assess the research hypothesis.

5.2 Graphical results

The outcomes of data calculating using SPSS statistical software are presenting in table 4. Based on the calculations using the Wilcoxon Signed rank Test method, the summary of ranks values used is the mean rank value and the sum of ranks value, divided into negative groups of ranks, positive ranks, and ties. Negative Ranks results showed 25 companies had ROE values in 2020 (after announcement Covid-19) lower than ROE in 2019 (before announcement Covid-19). Results obtained in Positive Ranks showed that only 13 companies had higher ROE values in 2020 than ROE values in 2019. Ties value is 0 shows that there are no similar ROE values in 2019 and 2020.

Table 4. Ranks analysis.

Description	N	Mean Rank	Sum of Ranks
Negative Ranks	25	22.66	566.50
Positive Ranks	13	13.42	174.50
Ties	0		
Total	38		

5.3 Proposed improvements

Based on Figure 3, the profitability of the company in 2020 decreased compared to 2019. Declining profitability is experiencing by 25 companies or 65.79% from a total sample of 38 companies. The announcement of the first Covid-19 patient on March 2, 2020, caused the community to begin to reduce activities outside the home, following the government's advice to do work from home and distance learning. In addition, various policies also support reducing economic activity, such as Large-scale social restrictions and restrictions on activities in shopping centres and recreation areas.

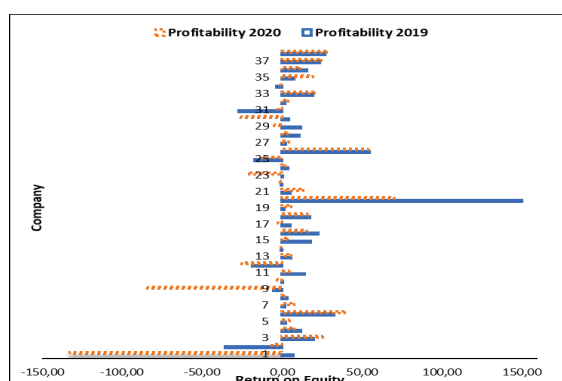


Fig. 3. Comparison of company profitability 2019 and 2020.

5.4 Validation

Based on the calculation results presented in table 5, the Z value is -2.842 with the p-value is 0.004 where the p-value is below the significance value of 0.05. The

hypothetical decision is to reject H0; the conclusion is accepting H1: There is a significant effect of the Covid-19 pandemic on company profitability in the technology and telecommunications industry.

Table 5. Wilcoxon signed ranks test result.

Description	After – Before
Z	-2.842
Asymp. Sig. (2-tailed)	.004

6 Conclusion

The Covid-19 pandemic has hit the economy globally. Governments in various countries are trying to reduce the pandemic spread through several policies, such as work from home, distance learning, and social distancing. Diverse approaches that seek to reduce the mobility of community activities have an indirect positive impact in lowering Covid-19 cases [1], although these policies decrease economic activity [2]. Indonesia's economy during the pandemic declined, the first economic decline since 1998.

Technology and telecommunications support connectivity and productivity on business activities and education during pandemic Covid-19 [5]. The telecommunications index has positive performance supported by increasing demand for work from home and distance learning [10]. However, the need for communication and internet connection rose during the pandemic; most technology and telecommunications companies listed on the Indonesia stock exchange experienced a decrease in profitability. Companies in the technology and telecommunications industry observed a decrease in profitability of 25 companies or 65.79% from a total sample of 38 companies.

Analysis of profitability comparison based on financial statements for 2019 and 2020 shows a significant effect of the Covid-19 pandemic on company profitability in the technology and telecommunications industry. Implementation of various policies also backs reducing economic activity, such as Large-scale social restrictions and restrictions on activities in shopping centers and recreation areas. In general, these restrictions lower the profitability of companies in the technology and telecommunications industries. Further research can examine the impact of the Covid-19 pandemic on other industry sectors such as consumer goods and retail.

References

1. B. N. Ashraf, *Economic impact of government actions to control COVID-19 pandemic: evidence from financial markets* <https://ssrn.com/abstract=3628693> (2020)
2. P. Ozili, T. Arun, *Spillover of COVID-19: impact on the global economy* Available at SSRN 3562570 (2020)
3. H. Liu, A. Manzoor, C. Wang, L. Zhang, Z. Manzoor, *The covid-19 outbreak and affected countries stock markets response*, International J.

- Environmental Research and Public Health **17** (2020)
4. D. Savic, *COVID-19 and work from home: digital transformation of the workforce*, The Grey Journal **16**, 2, pp. 101-104 (2020)
 5. M. K. Khan, *Importance of telecommunications in the times of covid-19*, Telecommunication Systems **76**, pp. 1–2 (2021)
 6. C. P. Jones, *Investments principles and concepts* (12th Ed.) (John Wiley & Sons, Singapore, 2014)
 7. S. Thakur, *Effect of covid-19 on capital market with reference to S&P 500* Available at SSRN 3640871 (2020)
 8. Z. Bodie, A. Kane, A. J. Marcus, *Investments* (11th Ed.) (McGraw-Hill Education, New York, 2018)
 9. D. K. Pandey, V. Kumari, *Event study on the reaction of the developed and emerging stock markets to the 2019-nCoV outbreak*, International Review of Economics & Finance **71**, pp. 467 – 483 (2021)
 10. M. M. Alam, H. Wei, A. N. M. Wahid, *Covid-19 outbreak and sectoral performance of the Australian stock market: an event study analysis*, Australian economic papers, e12215 (2020)
 11. S. H. Kwan, T. M. Mertens, *Market assessment of covid-19*, FRBSF Economic Letter **14**, pp. 1-5 (2020)
 12. A. Fadjar, J. Bagja, A. Y. Setiawan, *Financial performance and stock returns*, Turkish Journal of Computer and Mathematics Education **12**, 10, pp. 7355-7363 (2021)
 13. Mulyono, N. Saraswati, *Investment and capital market* (Manggu Makmur Tanjung Lestari, Bandung, 2020)
 14. M. U. Arshad, *Forecasted E/P ratio and ROE: Shanghai stock exchange (SSE) China*, SAGE Open **11**, 2, pp. 1-15 (2021)
 15. A. Okafor, B. N. Adeleye, M. Adusei, *Corporate social responsibility and financial performance: evidence from US tech firms*, J. Cleaner Production **292**, 126078 (2021)
 16. S. A. Ross, R. W. Westerfield, J. F. Jaffe, B. D. Jordan, *Corporate finance* (McGraw-Hill Education, New York, 2019)