

# **Emergent Strategies from COVID-19 Pandemic on Indonesian Medical Equipment Manufacturer**

**Rifqi R Prathama, Daffa R Kaiyandra and Muhammad Habiburrahman**

Department of Industrial Engineering, Faculty of Engineering

Universitas Indonesia, Depok, West Java, Indonesia

[rifqi.rheza@ui.ac.id](mailto:rifqi.rheza@ui.ac.id), [daffa.reza@ui.ac.id](mailto:daffa.reza@ui.ac.id), [m.habiburrahman@ui.ac.id](mailto:m.habiburrahman@ui.ac.id)

## **Abstract**

COVID-19 pandemic has disrupted industrial sector activities. However, one of the sectors that recorded an increase in performance was the health sector. Therefore, the study took the object of a company engaged in manufacturing medical devices located in Indonesia. This study utilizes data from the company's annual report for 2017 to 2021. Researchers also conducted interviews with the company's Director of Operations. With the background of different times and conditions with the aim of identifying strategies that are applied to different time conditions and also the impact of the strategy, first when the company was running operations before the COVID-19 pandemic, namely in 2017 to 2019 where sales increased based on the annual report. then the second was during the COVID-19 pandemic in 2020 where the company reached a record high in sales and the third was in 2021 when the government entered a time when the government shifted priorities from handling the COVID-19 pandemic to efforts to recover the economy. This incident caused an oversupply of medical equipment, resulting in an income of IDR 35 billion. In 2022, the company is trying to adapt to the Indonesian government's program to create a new campaign to prevent stunting in children under five years of age.

## **Keywords**

COVID-19, Manufacture, Medical, Strategy

## **1. Introduction**

The COVID-19 epidemic began in China in late 2019. By the end of the first quarter of 2020, the epidemic has been declared as a widespread pandemic by the World Health Organization (WHO) because it has spread all over the world. One of the countries affected by the pandemic is Indonesia, which reported its first case in March, 2020.

This pandemic is not only endangering human lives, but it is also disrupting the activities of various industrial sectors around the world, as most governments around the world have been forced to close their borders and lock down their countries in an attempt to isolate themselves and prevent the virus from spreading. The reduction in industrial and human activities in general, combined with the country's emergency healthcare expense led to multiple problems such as supply chain disruption (Inoue et al. 2021) and economic recession. In Indonesia, COVID-19 pandemic also has negative impact on most of the industrial sector, many businesses have reported plunging performance drop as an effect of social restriction that is implemented by the Indonesian government in order to stop the virus from spreading. But there is a certain sector that has improvement in performance because of high demand, that is healthcare sector. This sector included chemical, pharmacy, traditional medicine, and medical equipment industry (Kemenperin 2020; Setyowati and Elfiana 2022).

During the COVID-19 epidemic, global health systems were put under unprecedented strain, with many health and social care professionals experiencing a lack of personal protective equipment (Vallatos et al. 2021). The extremely high demand provided to be a good fortune for medical device manufacturers, especially for manufacturer that is focused on producing personal protective equipment, and other medical equipment that is used to treat those who are affected by the pandemic such as sterilizers and ventilators (U.S. FDA 2022). The needs for medical device software that is used to track, monitor, and produce data for analysis related to pandemic is also increased. (Son 2020). In 2020, as an effort to prevent COVID-19 essential needs shortages, Indonesian government restricts export of surgical mask, personal protective equipment, hand sanitizer, and raw material for making surgical mask. The government also ease the bureaucracy for medical equipment manufacturer so they can produce COVID-19 essential

needs faster. To further avoid shortages, Indonesian governments diversified textile industries production by making them manufacture a surgical mask and protective personal equipment (GAKESLAB 2020).

One way for the company to survive the pandemic and edge its competitors is by implementing the correct strategy. Strategy allows organizations to gain competitive advantage from three different bases: cost leadership, differentiation, and focus. These bases are called generic strategies (Porter, 1985). Organizations must be adaptable and flexible in the face of unpredictability, in addition to having a strictly planned strategy. The most effective techniques combine deliberation and control with flexibility and organizational learning (Mintzberg 1987; LO and Sugiarto, 2021). In accordance with previous statement, according to Nurhadi et al. (2021), the company's internal capabilities greatly affect the company's readiness. Internal aspects such as marketing, financial, and research & development have a strong correlation with the company's strategy. When developing a strategy for a manufacturer, it must be noted that the most important capability is the production/operations dimension, including flexibility, product delivery, quality, and cost reduction (Nurchahyo et al. 2019)

To measure the success of strategy implemented by the company under COVID-19 pandemic, the strategy must be evaluated. There are multiple ways of strategy evaluation, one of the common practices is using a strategy-evaluation framework (David, 2011). In the framework, organizational performance must be measured, and comparison must be made between planned and actual performance. According to Phillips and Moutinho (2000), company performance measurements can be divided into two groups, financial or nonfinancial performance.

Due to those relevancies, researchers aim to understand the competitive strategy implemented by the company to cope with the issues, and also identify them as intended or emergent strategy. This research also aims to understand the impact of those strategy on the company performance, because according to Nurchahyo et al. (2021), a company's operational performance and business performance are important in increasing the competitive advantage of the manufacturing industry. This study examines PT Bumi Indah Putra Medika (PT BIPMED) as a case study, and measure the company performance to evaluate the strategy implementation.

## **1.1 Objectives**

The objectives of this research are to identify the intended and emergent strategy of an Indonesian medical equipment manufacturer before COVID-19 (2017-2019), on the first year of COVID-19 pandemic (2020), and second year of COVID-19 pandemic (2021) when the economy started to recover, and understand the impact of those strategy on the company performance

## **2. Literature Review**

### **2.1 Strategy**

Strategy can be defined as the science of formulating, implementing, and evaluating that enables an organization to achieve its objective (David, 2011). In addition, strategy is a continuous improvement activity that is carried out based on what will be expected in the future (Nurchahyo et al. 2019).

### **2.2 Industrial Strategy**

An action that is needed due to innovations in new markets and changes in consumer behavior patterns. There are two concepts to determine the developed strategy (Nurchahyo et al. 2019).

- 1) Distinctive Competence is a strength that is owned by the company and is not easily imitated by competitors
- 2) Competitive Advantage is an activity carried out by a company to get a great opportunity so that it can be superior to its competitors.

### **2.3 Intended Strategy**

Intended strategy is the strategy that an organization hopes to execute. Intended strategies are usually described in detail within an organization's strategic plan. When a strategic plan is created for a new venture, it is called a business plan.

### **2.4 Emergent Strategy**

For a strategy to be perfectly emergent, there must be order-consistency in action over time in the absence of intention about it. (No consistency means no strategy or at least unrealized strategy intentions not met. It is difficult to imagine action in the total absence of intention-in some pocket of the organization if not from the leadership itself

such that we would expect the purely emergent strategy to be as rare as the purely deliberate one (Mintzberg and Waters 1985).

## 2.5 Types of Strategy

Alternative options that can be applied by the company in managing the company's strategy (David 2011). Table 1 shows the types of the strategy.

Table 1. Types of Strategy

<b>Integration Strategies</b>	
<b>Forward Integration</b>	Increase partial or full control over distributors and retailers
<b>Backward Integration</b>	Increase partial or full control over suppliers
<b>Horizontal Integration</b>	Increases partial or complete control over competitors
<b>Intensive Strategies</b>	
<b>Market Penetration</b>	Take an approach to seek a wider market share for a product or service
<b>Market Development</b>	Introducing existing products into new markets
<b>Product Development</b>	Carry out product or service development to seek increased sales
<b>Diversification Strategies</b>	
<b>Related Diversification</b>	Adding a new product or service related to the company's business processes
<b>Unrelated Diversification</b>	Adding a new product or service that is not related to the company's business processes
<b>Defensive Strategies</b>	
<b>Retrenchment</b>	Regrouping through cost and asset reductions to reverse declining sales and profits
<b>Divestiture</b>	Selling Part of the organization
<b>Liquidation</b>	Selling part or all of the company's assets

## 3. Methods

This research is conducted in one of the Indonesian medical equipment manufacturers that is PT BIPMED. PT BIPMED was first established in 1998 focusing on the production of medical beds and other hospital furniture equipment such as examination tables, operating tables, baby incubators, cupboards, instrument trolleys, and others. Then in 2000 PT BIPMED officially had a factory with national standards with approximately 100 employees. The establishment of this company is due to the fact that the number of local producers for this category is very small and has a dream that Indonesia will 100% use domestic products for the Hospital Furniture category.

PT BIPMED formulate a new business strategy based on market demand and external opportunities. This company has been doing so since a long time ago before they started focusing on a medical furniture product. They used to manufacture a medical disposable device, their products ranging from needle, syringe, bandages, and gloves. They started making medical bed because of their client request and market demand. This would provide to be more profitable products, and after that they transition from focusing on medical disposable product to medical beds and other medical furniture

This research used a primary data that is collected from PT BIPMED's annual report from 2017 to 2021. This will allow the researchers to processed the data using descriptive statistics method to analyze the company's financial performance from before the pandemic, when it occurs, and after the pandemic. Using method, researchers will be able to describe the supplied data in an ordered way by describing the connection between variables in a sample or population. (Kaur et al. 2018). The researchers also conducted interview with the Operational Director of the company to discuss about the emerging opportunities and trends that is influenced by COVID-19 pandemic as perceived by the company, and to gain insight on future medical equipment industry's trend.

To identify the company's strategy, firstly the researchers discuss the external opportunities and trends that is emerging from COVID-19 pandemic. After that, researchers can determine the strategy that the company have

implemented. To understand the company's strategy performance when facing the COVID-19 pandemic and current medical industry's trend, researchers compared the company's financial performance from before the COVID-19 pandemic (2017-2019), on the first year of COVID-19 pandemic (2020), and second year of COVID-19 pandemic (2021) when the economy started to recover.

Lastly, to address how the company performs when compared with other local medical equipment manufacturer, researchers will do a comparative analysis. Data of other company will be collected from various resources on the internet.

#### **4. Results and Discussion**

An interview that was conducted with the Operational Director of PT BIPMED in March 2022 provided information on the strategy implemented and the company's performance over the last five years. This section will explain the company's financial performance in the period before the pandemic (2017-2019), the first year of the pandemic (2020) and the second year of the pandemic (2021) (as shown in Figure 1). In addition, the intended strategies and emergent strategies that were implemented will also be discussed in each time period.

In the period before the COVID-19 pandemic (2017-2019) the company's revenue continued to increase from IDR 63 billion in 2017 to IDR 79 billion in 2019. During the first year of pandemic (2020) revenue increased greatly to IDR 90 billion (the highest in the last five years) but decreased sharply in 2021, even lower than revenue in 2017 before the COVID-19 pandemic.

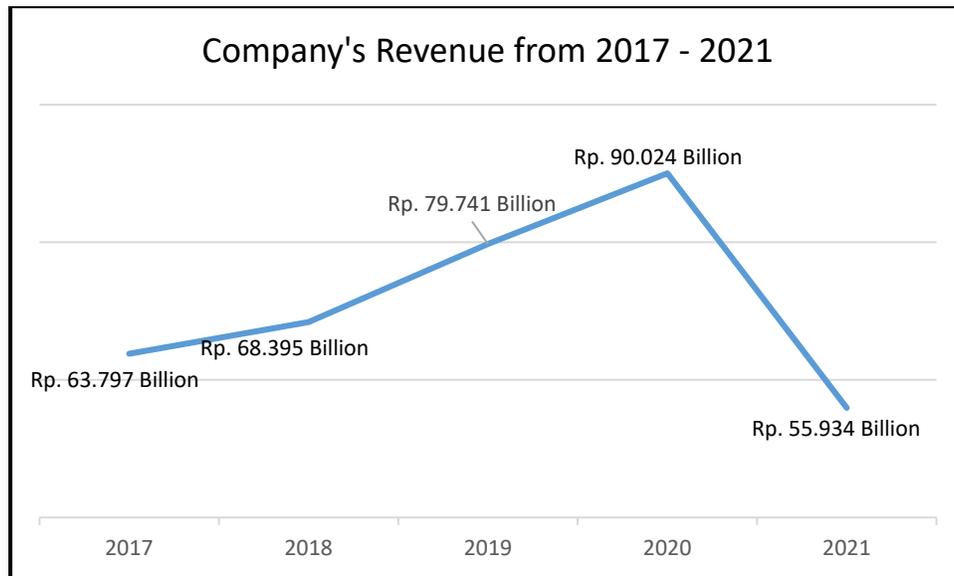


Figure 1. PT BIPMED's revenue from 2017 to 2021

Two years before the COVID-19 pandemic (2017-2019), the company aims to expand its market to other remote place in Indonesia, such as Asmat Regency in Papua and region of Maluku. The company also diversify its products by introducing new line of product in ambulance and special vehicle (Figure 2) due to client's demand. Turns out, the new products are very profitable, therefore, they decided to have it as a permanent product. Hence, it can be identified that the company's strategy are market development and diversification. Market development is an activity when a company wants to introduce an existing product or service into new geographic area. While diversification is when a company wants to add new products or services (David, 2011). In accordance to the YoY revenue data from 2017-2019, it can be concluded that the strategy generates a positive impact on the company's financial performance.

During this pre-COVID-19 period (2017-2019) the base of how PT BIPMED decided to make a new line of product is market demand and trends. The company's management and marketing team regularly attend a medical equipment manufacturer convention every year for the purpose of looking a new client and surveying an upcoming

medical product that is predicted to be popular in the near future. According to the conducted interview with the operational director, the other factor that is affecting the company's new product is Indonesia's government medical trends and campaign.



Figure 2. PT BIPMED's product diversification

In early 2020, the first year of pandemic, first COVID-19 case in Indonesia happen in March 2020. Immediately, government decided to divert the allocation of country's spending for various fields to focus on the health sector in order to meet the needs of isolation rooms and equipment for COVID-19 sufferers. Since then, there have been many orders from the government, regional hospitals and private hospitals for medical equipment. In this year, there were several emergency hospital built especially for COVID-19 patients. One example is the conversion of Wisma Atlet Kemayoran into a COVID-19 emergency hospital that can accommodate up to 2500 patients, since March 23, 2020. In addition, the Patriot football stadium in Bekasi City has also been converted into an emergency hospital that can accommodate 55 patients that equipped with all the supporting equipment for COVID-19 patients. PT BIPMED is one of the suppliers for the emergency hospital at the Patriot Stadium.



Figure 3. (a) Biosafety cabinet and (b) Isolation chamber

Seeing the changes in this external opportunities, the company adapts by producing the requested equipment, there are even several new products specially made to meet the needs of the pandemic period, including biosafety cabinets and isolation chambers (Figure 3). According to David, the strategy applied by PT BIPMED is classified as a product development strategy for the emergent strategy influenced by external factor (market). Product development is a strategy that seeks increased sales by improving or modifying existing products or services (David, 2015). Medical cabinet and stretcher products have been already marketed and sold by the company, but during this

pandemic, the company modified the product with additional isolation features and the use of ultraviolet light as a form of biosafety. Interestingly, product development usually requires large research and development costs. However, in the case of this pandemic, the company did not need to spend huge amount of money on research and development because the company only needs to add features that can isolate the Covid virus and eliminate it. In addition, PT BIPMED regularly sends delegation to attend the international medical equipment exhibition around the world such as in Germany, United Arab Emirates and China. the purpose of this activity is to find out the trend of medical devices in the world, if possible try to make it yourself, if not possible, will cooperate as the exclusive distributor of the product. Another goal is to establish cooperation with suppliers of raw materials. The impact of the implemented strategy, financial performance in 2020 became the year with the highest revenue for the last five years, recording IDR 90 billion.

The decrease in the company's revenue in 2021 occurs due to the excess of medical equipment supply from 2020. The reason for that is in March 2021, the Indonesian government shifted its focus from COVID-19 pandemic relief in 2020 to economic recovery in 2021. Consequently, the state budget from 2020 that is aimed to handling COVID-19, greatly shifted to sectors that is believed to be able to recover the economy. As an effect, purchases of medical devices declined in 2021, creating an oversupply of medical equipment.

With the decline in the purchase of medical devices in 2021, it greatly affected the company's revenue, the company must look for alternative strategies to increase its sales. Indonesian government create a campaign program to prevent stunting in children under five caused by lack of nutritional intake in children, therefore it is an opportunity for PT BIPMED to approach the market by looking at what products the company can produce to support stunting prevention programs in Indonesia. child. PT BIPMED develop its existing baby incubator (Figure 4), increase its production, and market it to the government. This strategy is commonly referred to as Product development as an emergent strategy for the company to increase its sales by entering the market.



Figure 4. Baby incubator

#### **4.1 Comparative Analysis**

According to Gita and Septa (2021), one of Indonesia's local medical equipment manufacturing company that based in Denpasarcalled PT Oksigen Medika Teknik strive on the first year of COVID-19 pandemic (2020) from the increasing sale of surgical mask and thermometer gun. Therefore, their emergent strategy can be assessed as market development as market development as they able to took advantage on the pandemic. But, as time passes by, they suffer from decrease of sales. The reason why this is happening has been identified as a marketing strategy failure, as they did not adapt to the evolving market and needs.

Other medical equipment related company, called PT Itama Ranoraya Tbk (IRRA), record an exceptional 100% increase in revenue on the first year of COVID-19 pandemic (2020) (CNBC Indonesia, 2020). IRRA is one of the biggest medical equipment companies in Indonesia, they are also a public company that are listed in Indonesia's Stock Exchange. They are a medical equipment distributor who provides USG equipment, covid rapid test device, personal protective equipment, ambulance, etc. On the second year of COVID-19 pandemic (2021), IRRA record a 754% increase in Q1 YoY revenue. This outstanding performance is achieved because of their excellent business strategy, they adapt to the pandemic by implementing business transformation, they did not only rely on their capacity as a distributor, but also expand their business by becoming a manufacturer and produce high-tech medical

equipment (CNBC Indonesia, 2021). They also perform an acquisition on other Indonesian medical device manufacturer called PT Oneject Indonesia (Oneject). Oneject is the biggest Auto Disable Syringe (ADS) manufacturer in Asia (Kontan 2021). This acquisition can be rated as successful as IRRA record a 18% increase in Q1 YoY revenue in 2022 (Trenasia 2022). The strategy of this company can be identified as related diversification and horizontal integration, and are performing exceptionally well.

When compared with these companies, it can be said that COVID-19 pandemic brings an opportunity to medical equipment company including PT BIPMED. PT BIPMED and the other companies have a different approach and strategy to adapt with the evolving market and needs during the pandemic, and therefore, it yields a different result for all.

## **5. Conclusion**

From this study, it can be concluded that during the year 2017 to 2019 before the pandemic occurs, the company implemented a market development and diversification strategy as intended, there is no disrupting phenomenon that would force the company to change its strategy. The primary reason for the company to use these strategies are market demand and trends. The strategy they're using provided to be useful because the company recorded a IDR16 Billion increase in revenue from 2017 to 2019.

During the first year of COVID-19 in 2020 where most companies struggle to survive, PT BIPMED thrive because its product are much needed, and they able to adapt with the presented opportunities by implementing product development as an emergent strategy. This strategy is able to give a positive impact on the company's performance, where they recorded an all-time high YoY revenue in 2020.

The year after (2021), when the country's economy is recovering. The shift in Indonesian government's priority from COVID-19 pandemic relief to economic recovery attempt, had a negative implication on the company and Indonesian medical equipment sector as a whole. Because the state budget had to be allocated into other sector making the government will not buy any non-essential medical equipment. This event creates an oversupply of medical equipment, making the company suffer a decrease of IDR35 Billion in revenue.

In 2022, the Indonesian governments made a new campaign in preventing a stunting in children under five years old. PT BIPMED adapt with this trend by developing a related product in its existing baby incubator.

According to the comparative analysis, it can be concluded that different company have its own approach and strategy when addressing the evolving market and needs during COVID-19 pandemic.

This research contributes to the scarce literature of emergent strategy. Lastly, the limitation of this research is that researchers only examine one company that produces and sells medical equipment in Indonesia only comparing with two other medical equipment company in Indonesia, but is very different in scale. PT Oksigen Medika Teknik is a smaller company than PT BIPMED, but IRRA is a much bigger company than PT BIPMED. Another limitation is that the methods used are limited to semi-structured interviews and descriptive statistics.

Therefore, the recommendation for the next research is to examine more companies in the medical equipment industry on the same scale and size, and also preferably with the same types of main products (for example: in PT BIPMED's case, their main line of products are medical beds and other furniture). Then an industrial analysis can also be carried out using Porter's five forces to further examine the condition of the medical equipment industry.

## **References**

- CNBC Indonesia, Pandemi Covid-19, LabaBisnis Alat Kesehatan Naik 100%. Retrieved from CNBC Indonesia Official Web Site, 21 September 2020.
- CNBC Indonesia, Begini Strategi & Transformasi Bisnis IRRA Pasca Pandemi. (H., Rahajeng K.) Retrieved from CNBC Indonesia Official Website, 11 June 2021.
- David, Fred R., David, Forest R., *Strategic Management: Concept and Cases, a Competitive Advantage Approach*, 16<sup>th</sup> Edition, Harlow: Pearson Education Limited, 2017.
- GAKESLAB, Alat Kesehatan dalam Penanganan COVID-19. (Anaya, A.) Retrieved from Indonesia's Hospital Association Official Web Site.

- Hendrawan, C. N., Salam, M. Y., Fitriana, R., Impact of Strategy on the Operational and Financial Performances of an Indonesian Coal Mining Company during COVID-19 Pandemic: A Case Study, *Proceedings of the International Conference on Industrial Engineering and Operations Management*, Rome, Italy, pp. 811-820, August 2-5, 2021.
- Indonesian Ministry of Industry (Kemenperin), Kemenperin Pertajam Taji Industri Farmasi dan Alat Kesehatan. Retrieved from Official Web Site of Indonesian Ministry of Industry, December 21, 2020.
- Kaur P, Stoltzfus J., Yellapu V., Descriptive Statistics. *International Journal of Academic Medicine*, vol. 4, no. 1, 60-pp. 63, 2018
- Kontan, ItamaRanoraya (IRRA) akuisisi 51% sahamOneject Indonesia. (Elvira, V.) Retrieved from Kontan Official Web Site, 29 September 2021.
- LO, P., & SUGIARTO, S. Strategic Planning in SMEs: A Case Study in Indonesia, *The Journal of Asian Finance, Economics and Business*, vol. 8, no. 2, pp. 1157–1168, 2021.
- Mintzberg, H., Waters, J.A. Of Strategy, Deliberate and Emergent. *Strategic Management Journal*, vol. 6, pp. 257-272, 1985.
- Mintzberg, H. Crafting Strategy. *European Management Journal*, vol. 22, no. 6, pp. 669-684, 1987.
- Nurcahyo, R., Paramitha, F., Gabriel, D. S., and Ramdha, D. A. (2019, January 28). Strategy Prioritization and Development for Batik Industry. *2018 IEEE 5th International Conference on Engineering Technologies and Applied Sciences, ICETAS 2018*.
- Nurcahyo, R., Wibowo, A. D., Robasa, R., Cahyati, I., Development of A Strategic Manufacturing Plan from a Resource-based Perspective, *International Journal of Technology*, vol. 10 , no. 1, pp. 178-188.
- Nurcahyo, R., Zulfadlillah, Habiburrahman, M., Relationship between ISO 9001:2015 and Operational and Business Performance of Manufacturing Industries in a Developing Country (Indonesia), *Heliyon*, vol. 7, no. 1, 2021.
- Phillips, P. A., Moutinho, L., The Strategic Planning Index: A Tool for Measuring Strategic Planning Effectiveness, *Journal of Travel Research*, vol. 38, no. 4, pp. 369-379.
- Porter, Michael E., *Competitive Advantage*. The Free Press, New York, 1985.
- Nurhadi, H. Q., Nurcahyo, R., Gabriel, D. S., Strategic Development for A Filter Automotive Component Company in Facing the Electric Vehicles Era in Indonesia, *Proceedings of the 11<sup>th</sup> Annual International Conference on Industrial Engineering and Operations Management*, Singapore, March 7-11, 2021.
- Sabila, Y. S., Pahlawan, H. F., Purnamaningtyas, I., The Impact of COVID-19 on Indonesian Infrastructure Companies: Determine the Company's Survival Strategy, *Proceedings of the International Conference on Industrial Engineering and Operations Management*, Rome, Italy, August 2-5, 2021, pp. 791-798.
- Setyowati, L., Elfiana, C. T., Pengaruh Pandemi COVID-19 dan Volume Penjualan Terhadap Total Pendapatan pada PT Internusa Medika Surabaya, *Jurnal Ilmiah Manajemen dan Kewirausahaan*, vol. 1, no. 1, pp. 163-171.
- Son, H., How COVID-19 is Impacting the Medical Device Industry. Available on Promenade Software Official Web Site.
- Trenasia, Penjualan JarumSuntikOnejectMeroket 872 Persen, Pendapatan Kuartal I-2022 ItamaRanoraya (IRRA) Tumbuhjadi Rp270 Miliar. (Ihsan, D. M.) Retrieved from Trenasia Official Web Site. 2022.
- U.S. Food and Drugs Administration, Coronavirus (COVID-19) and Medical Devices. Retrieved from Official website of the United States Government Food and Drugs Administration, 2022.
- Vallatos A, Maguire JM, Pilavakis N, Cerniauskas G, Sturtivant A, Speakman AJ, Gourlay S, Inglis S, McCall G, Davie A, Boyd M, Tavares AAS, Doherty C, Roberts S, Aitken P, Mason M, Cummings S, Mullen A, Paterson G, Proudfoot M, Brady S, Kesterton S, Queen F, Fletcher S, Sherlock A and Dunn KE, Adaptive Manufacturing for Healthcare During the COVID-19 Emergency and Beyond, *Front. Med. Technol*, vol. 3, pp. 702526, 2021.

## Biographies

**Rifqi Rheza Prathamais** a master's student in Department of Industrial Engineering, Faculty of Engineering, Universitas Indonesia. He obtained his bachelor's degree from Industrial Engineering Department, Faculty of Industrial Engineering, Telkom University in 2021.

**Daffa Reza Kaiyandra** is a master's student in Department of Industrial Engineering, Faculty of Engineering, Universitas Indonesia. He obtained his bachelor's degree from Mining Engineering Department, Faculty of Earth and Energy Technology, Universitas Trisakti in 2021.

**Muhammad Habiburrahmanis** a doctoral student in Department of Industrial Engineering, Universitas Indonesia