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INVESTMENT IN RESEARCH AND DEVELOPMENT AFTER THE PANDEMIC COVID-19 IN INDONESIA

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ABSTRACT

Objective: Investment in research and development (R&D) is an important part of a company's development country, as evidenced by developed countries relying on high R&D costs. It is also hoped that this can be imitated by Indonesia because the research and development budget is still less than 1%.In this way, we can be more competitive with other countries. In the ASEAN region itself, Indonesia is in fourth place. Design/methodology: This research is descriptive research with a qualitative approach. In this research, we want to explain why changes in research and development investment costs have changed due to the COVID-19 pandemic and how management is responding to it. Findings: The results of this article show a change in research and development (R&D) investment ideology, this is caused by price fluctuations caused by the Covid-19 pandemic.

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INTRODUCTION

The recent outbreak of the COVID-19 virus shows that infectious diseases are easily transmitted because the economy is open and easily threatens the economic stability of a country. Past infections such as the black death, SARS, H1N1 influenza, and swine flu have also had similar impacts on the global economy. Covid-19 is contagious and the ability to stay on surfaces makes it difficult. This disease is considered more contagious than flu and swine flu because it is easily transmitted between people man. The second factor is delays in drug development and approval because early infections cause significant deaths and economic losses. Another characteristic of COVID-19 is the continued growth and resistance of microorganisms to bactericidal substances, making it a persistent and recurring threat. Most epidemics are recurrent (WHO, 2020). The coronavirus epidemic is breaking down underline the ineffectiveness of capitalism believed to be based in part on prioritizing income over society's needs. Pharmaceutical companies have long started making vaccines against coronary heart disease in non-capitalist societies. This rapidly developing new coronavirus belongs to the coronavirus family (SARS and MERS) that we have known for a long time. The search for a vaccine and treatment for coronavirus may have started long ago so that the latest coronavirus can be prevented to some extent. However, drug companies did not initiate these studies because the treatments did not appear to be effective enough (Henderso, 2020). It will take 12-18 months for researchers to develop a vaccine against Covid-19. According to epidemiology, the coronavirus can kill up to 50 million people worldwide (France, 2020). Many of these deaths could have been avoided if a vaccine had been introduced. And the vaccine has not been developed because it is not economical for pharmaceutical companies. Many of these deaths could have been avoided if a vaccine had been introduced. And the vaccine has not been developed because it is not economical for pharmaceutical companies.

Research and development (R&D) is very important for economic development, so many developed countries take research and development activities seriously. Data collected in(Wikipedia, 2020), research funding for developed and developing countries is more than 2% of GDP. In 2020, research and development budgets for America (2.74%), Germany (2.94), Japan (3.15%) and South Korea (4.29%). However, the development of

research and development in Indonesia is still lagging behind other countries in the world, even when compared with ASEAN countries. Research and development trends in Indonesia compared to 4 (four) ASEAN countries are considered lagging. The R&D budget allocation based on the International Competition Index for 4 (four) ASEAN countries can be seen as follows:

Table 1

Research and development spending

Country	research and development costs
Singapore	2.64%
Malaysia	1.29%
Thailand	0.39%
Indonesia	0,31%
Vietnamese	0.21%

Source: Wikipedia

Table 1 shows that in 2020 the research budget and growth in Indonesia was 0,31%, lower than Malaysia's 1.29%, Thailand's 0.39% even very different from Singapore's 2.64%, if you look further, Indonesia's research and development budget is slightly above Vietnam. However, it was not satisfactory. Compared to India, where both countries have large populations, their R&D budget is higher than India, namely 0.85%. Quoted from katadata.com (2019) Sofian Effendi as deputy chairman of AIPI "ideally the allocation of research funds is at least 1% of GDP".

According to (Rizwan et al., 2020) estimates that the world economy will experience a decline of 3% of GDP in 2020. To slow the spread of the virus, people are expected to reduce social activities and mobility (Tambunan, 2020). As a result of the comprehensive social restriction (PSBB) policy issued by the government, it is making it difficult for companies to survive during the pandemic. Infectious diseases are one of the leading causes of death, accounting for one-quarter to one-third of deaths worldwide. Apart from major developments in the pharmaceutical industry, the prevalence of infectious diseases is also increasing due to globalization, increased travel and trade, urbanization, crowded cities, changes in human behavior, germ resuscitation, and inappropriate use of antibiotics. (Verikios, 2020) .

THEORY

Good Corporate Governance

The term Good Corporate Governance was first introduced by the Cadbury Committee in 1992, known as the Cadbury Report. The report is seen as an important milestone for corporate governance worldwide. In Indonesian, management is translated as managing or administering (Sutojo & Aldridge, 2008). (Cadbury, 1992) states that corporate governance aims to create value for all stakeholders (Supatmi, 2007. According to the National Committee for Governance Policy (KNKG), good governance (GCG) is one of the foundations of the market. economic system (GCG). to create competition in a healthy and advancing business environment(Diah, 2008)

Cadbury, Tjager, and Deny Committee (2005) define good governance as a system that regulates and manages companies to achieve balance between the company and its stakeholders. This relates to the managerial power of owners, board members, management, shareholders, and so on. Corporate governance is defined as the relationship of participants to policy and performance(Monks & Nell, 1995). Good corporate governance is associated with effective decision-making through organizational culture, values, systems, various processes, policies, and organizations, which aim to achieve profitability, manage business risks efficiently and effectively and responsibly by paying attention to the interests of stakeholders(Cooper & Pamela S. Schindler, 2006)

GCG can be used by Company organs to increase business success and Company accountability by implementing GCG principles, namely; Transparency, accountability, responsibility, independence, and fairness are based on applicable laws and ethical values.

Corporate Governance practices are consistently carried out by implementing the basic principles of GCG. Transparency is the availability of reliable and relevant information with easy, fair access for all stakeholders. Accountability, namely clarity of functions, roles, and responsibilities of Company managers and supervisors so that Company management is carried out effectively. Responsibility, namely management based on healthy corporate principles and compliance with applicable laws and regulations and healthy corporate principles. Independent management of the Company in a professional manner without conflicts of interest and influence or pressure from any party that is not by applicable laws and regulations and healthy corporate principles. Fairness is fair and equal treatment of shareholders and other stakeholders, including minority shareholders.

Investment in Research and Development (R&D)

Research and development are activities carried out to create and develop products to obtain better results(Kinanti & Nuzula, 2017).

The ability to change can encourage company growth and the creative well-being of stakeholders. Research and Development (R&D) can create product diversity, increasing competitiveness and greater efficiency of competitive companies(Guo et al., 2020). In addition, large investments in social welfare research and development can provide new services to customers. The term R&D (research and development) consists of two words. Research is an activity that aims to realize a scientific revolution and increase knowledge. Development is the application of research results to a design or plan to create a new product or service whose components, materials, systems, processes, or devices are mature. beginning of advertising production(Kieso et al., 2018). The theory behind R&D is asymmetric information.

Covid-19 And International Developments

COVID-19 emphasizes the need to understand contemporary global challenges rather than focusing on narrower international development strategies. The concept of international development focuses on bilateral relations based on assistance provided to each other, but the international development approach finds processes and problems related to countries.

International developments have so far focused on common problems and common issues such as global warming, terrorism, pandemics, and so on. Global development is about recognizing that a just world is shaped by cooperation and shared values, rather than making developing countries prosperous. The concept of global development is based on three important factors. First, relations between contemporary capitalist countries cross national borders (Horner, 2020). Second, there are several challenges faced jointly by countries throughout the world. Third, international development is about helping each other face shared challenges and reducing global disparities. These goals are identified and form part of the International Sustainable Development Goals (SDGs) and other conventions and agreements. Covid-19 creates an urgent need to use an international development approach to address shared problems and challenges. The interconnected world has caused the spread of COVID-19 in a very short time. This is a good example of the common challenges countries face and the failure to safeguard the global public interest.

This pandemic has harmed the economy, health, and society in the whole world(Abrams & Greenhawt, 2020). The impact of COVID-19 cannot only be analyzed from an economic perspective. This disease has caused many deaths and deaths in the United States and northern European countries. China, Brazil, Mexico, Africa, and other tropical countries also have high infection rates. Apart from health impacts, pandemics also have the worst social and economic impacts on human life (Anner, 2020). Jobs and livelihoods are lost and people suffer from anxiety due to the loss of social connections.

RESEARCH METHODS

This research is descriptive research with a qualitative approach. According to (sugiono, 2016), qualitative descriptive method is a research method based on post-positivist philosophy which is used to study the condition of natural objects (for example, the opposite

is an experiment) where the researcher is the main tool. The data collection technology is triangulation. (composite), data analysis is inductive/qualitative and the results of qualitative research are more focused on definitions rather than generalizations. Qualitative descriptive research aims to describe, explain, explain, and answer in more detail the problems you want to investigate by researching as many individuals, groups, or situations as possible. In qualitative research, human research tools and results are written in the form of words or statements that are appropriate to real-life situations.

RESULTS AND DISCUSSION

Mudambi and Swift (2011) found that company growth was negatively related to changes in research and development in small companies but positively related to large companies. Moreover, this relationship is industry-dependent, where steady growth is positively (negatively) associated with changes in research and development for fast (slow) moving industries. Using a measure called organizational slack, which is primarily related to a company's liquidity position and its ability to support new research and development projects in a timely manner,(Swift, 2013) found that the more relaxed the positive relationship between volatile research expenditures and development. and performance. He used Tobin's q to measure firm performance. The relationship between R&D variability and business performance is also related to management decision-making strategies.

During the COVID-19 pandemic, many companies and governments around the world increased their investment in research and development (R&D), especially in the fields of health and technology. The following are several things related to R&D investment during the pandemic:

1. COVID-19 Vaccine and Treatment:
   - Pharmaceutical and biotechnology companies are accelerating their R&D programs to develop COVID-19 vaccines and treatments.
   - Governments in various countries also provide financial support for this research through subsidy programs and contracts.
2. Health Technology:
   - CompanyLeading technologies have also increased their investment in developing health solutions, such as telemedicine platforms, smart medical devices, and rapid diagnosis technologies.
   - This increase encourages innovation and the use of technology to overcome health challenges during the pandemic.
3. Innovations in the Field of Public Health:
   - Governments and research institutions are conducting R&D programs to improve understanding of the virus, its epidemiology, and public health impact.
   - This research helps in the development of mitigation strategies, public health planning, and response management to pandemics.
4. Enhanced Security and Digital Technology:
   - Increased cybersecurity threats during the pandemic are also driving investment in R&D to improve the security of health systems and digital infrastructure.
   - Developing cybersecurity solutions and other digital technologies is a priority.
5. Remote Work and the Digital Divide:
   - The need for mass remote work during the pandemic is driving investment in technology and R&D to support the productivity of workers working from home.
   - Attention is also being paid to addressing the digital divide and ensuring equal access to technology.

It is important to note that the impact of R&D investments during COVID-19 is not only focused on the health sector, but also involves various sectors to address the challenges that arise during the crisis.

To encourage increased company spending in the R&D sector, the government generally provides incentives directly or indirectly to companies that carry out R&D activities. There are two types of incentives that the government can provide to encourage R&D activities. The first provides direct assistance in the form of grants or subsidies, and the second provides indirect assistance in the form of tax incentives.

In 2020, the Ministry of Finance issued PMK Number 153(Minister of Finance Regulation Number 153/PMK.010/2020 of 2020 concerning Granting Reductions in Gross Income for Certain Research and Development Activities in Indonesia, 2020) . PMK Number 153 of 2020 is a form of the government's commitment to continue to encourage efforts by business entities to actively participate in research and development activities. The involvement of business entities in research and development activities is for the sake of increasing the competitiveness of national innovation products.

Using the index as a measure of government firms, Patel et al. (2018) show that management prevents a negative correlation between company growth and changes in research and development. This relationship also exists for returns on assets. Technical capacity, defined as the number of scientists divided by the number of employees, is demonstrated by: Kang et al. (2017) to provide explanatory power for determining the importance of stability or volatility in research and development investments for businesses. Therefore, the literature suggests that the relationship between research change and formation and return is more complex than a simple linear relationship. suggests that management prevents a negative correlation between company growth and changes in research and development. This relationship also exists for returns on assets. Technical capability defined as the number of scientists divided by the number of employees is shown by: Kang et al. (2017) to provide explanatory power for determining the importance of stability or volatility in research and development investments for businesses. Therefore, the literature suggests that the relationship between research change and formation and return is more complex than a simple linear relationship.

One of the countries that is believed to be developing in the field of research and development is China, as quoted by Detik.com. China is included in the 14th GII 2020 published by the World Intellectual Property Organization (WIPO). China leads the middle and fourth-income economies in Southeast Asia, Asia South, and Oceania. There are 7 pillars of GII analysis, namely (1) infrastructure, (2) market sophistication, (3) knowledge and technology production, (4) creative production, (5) institutions, (6) human resources and research, and (7)) business sophistication. Robert M. Solow (1965) stated in his work entitled A Contribution to The Theory of Economic Growth that technological development can be a driver of economic growth. Looking at China's long journey in sustainable research and development proves that research and development from the state side can have a positive impact on the country's development and the welfare of its people. China realizes that science and technology are something that is not limited because it will continue to develop in the future. Various dimensions of people's lives in various fields need to continue to be touched by new technology and innovation for the sake of comfort. So carrying out research and development continuously is a bridge to a welfare state.

Covid-19 has had a serious impact on global value chains around the world, especially on investment and industry over the last 30 years. The pandemic has caused shortages of Chinese-made supplies, especially shortages of medical products that have impacted the health of many countries. As a result of increasing nationalism and protectionist policies against industrial sovereignty, many countries have imposed export bans, causing shortages of medical products such as medicines, personal protective equipment (PPE) and other products. medical. As a result, pressure on domestic value chains is increasing, and many things are coming to light.

Monetary policy has been negatively impacted by the Covid-19 pandemic. Economic closures and reduced borrowing opportunities have lowered the value of the local currency, making it difficult to pay debts in dollars. The government also faces a fiscal deficit due to increased spending on social protection for the unemployed and poor and low tax revenues. The liabilities resulting from Covid-19 are different from the financial crises of the 1980s or 2007-08 and cannot be explained by international development concepts. The positive impact of COVID-19 on Third World economies is increased digitalization. With the increasing risk of infection through physical contact, virtual business spaces are gaining popularity. Its potential spread through social contact has accelerated the emergence of online workplaces and digitally organized transportation. With the availability of online trading and digital systems, there is an opportunity to build a center database that can

function as an economic asset. It is critical to be part of global digital efforts to improve social and economic well-being and reduce the impact of the Covid-19 pandemic through digitalization. Therefore, COVID-19 requires an international development perspective rather than an international development concept because the international development concept can answer challenges. effectively. He prioritizes global cooperation rather than focusing on national and national issues because state issues require a vision for the future.

CONCLUSION

The conclusion of this article is how ideology investment research and development (R&D) investment in the pandemic has changed significantly, this is due to fluctuations in the value of the pandemic which changed the world economy. It starts with supply problems government debt and overheated companies pushing goods and people around the world. An increase in commodity prices suddenly had a direct impact on research and development (R&D) investments as many costs were shifted to other components or components, such as digitalization and health. Because digitalization was initially still relatively moderate, because this pandemic occurred, it created an urgent need, thus having an impact on immediate development. This cannot be separated from consumers and communities who need it most. Maybe in some countries with a good digitalization classification, it will not work. This brings changes to most funds. However, what is no less important is that the Indonesian government still considers R&D investment not that important. This can be seen from the R&D funds disbursed by the government falling in 2022 to 0.24%, whereas in 2020 it was 0.31. Meanwhile, the minimum funding standard for R&D is 1%.

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