

CONTRIBUTION OF THE PHARMACEUTICAL INDUSTRY TO ECONOMIC GROWTH AND PUBLIC HEALTH IN INDONESIA: A LITERATURE REVIEW

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Abstract

The pharmaceutical industry is one of the strategic sectors in economic development and health in Indonesia. As the fourth largest contributor among non-oil and gas manufacturing industries, the pharmaceutical industry has contributed significantly to economic growth, especially during the Covid-19 pandemic, where the sector's growth remained positive amid the national economic contraction. This contribution can be seen from the added value generated, increased investment, and job creation that continues to grow every year. In addition, the growth of the pharmaceutical industry in Indonesia is also influenced by an increase in population, an increase in life expectancy, and changes in people's behaviour that are increasingly aware of the importance of health. In terms of public health, the pharmaceutical industry plays an important role in providing quality, safe, and affordable medicines that support wider access to health services, including in government priority programmes such as the National Health Insurance (JKN). The availability of quality pharmaceutical products is also a key element in supporting the prevention and control of various diseases, as well as improving the quality of life and life expectancy of the Indonesian population. Innovation and technological adaptation carried out by the national pharmaceutical industry have helped drive production efficiency, expand the domestic market, and strengthen competitiveness at the regional level. However, the national pharmaceutical industry still faces major challenges, including dependence on imported raw materials, competition from global pharmaceutical products, production efficiency, and the need to strengthen sustainable research and development (R&D). Therefore, synergy between the government, industry players, and other stakeholders is needed to strengthen competitiveness and enlarge opportunities for the development of the pharmaceutical industry as a pillar of economic growth as well as improving public health in the future.

Keywords: pharmaceutical industry, economic growth, public health, contribution, Indonesia.

Introduction

The pharmaceutical industry is one of the strategic sectors in Indonesia's national economy that has an important role in providing medicines and medical devices for the wider community. The existence of this industry is very crucial, not only as an economic driver through drug production and distribution, but also as a major support for the national health system (D. Sari & Prasetyo, 2025). The pharmaceutical industry is a business entity that has an official permit from the Minister of Health to carry out activities to manufacture drugs or medicinal materials, both on a large and small scale, whose products must meet efficacy, safety and quality standards according to regulations, and are carried out by implementing Good Manufacturing Practices (GMP) to ensure that pharmaceutical products are suitable for use for public health purposes (Kashuri., 2025)

The development of the pharmaceutical industry in Indonesia shows a significant growth trend despite often being faced with various challenges, both in terms of regulation, availability of raw materials, and global market conditions. This sector consistently contributes to Indonesia's gross domestic product (GDP), as well as providing extensive employment opportunities for skilled labour (Nugroho & Setiawan, 2020).

Historically, the pharmaceutical industry in Indonesia has existed since the colonial era and experienced rapid development after independence. From the first pharmaceutical factory established in the 19th century to the large pharmaceutical companies that play an important role today, the industry has transformed following the needs and development of health science. The role of the pharmaceutical industry is increasingly important along with the increasing needs of the community for drugs and health services, especially in the Covid-19 pandemic situation which demands an increase in the production of drugs and medical devices quickly and effectively. The pharmaceutical industry plays an active role in providing the products needed for handling pandemics and other diseases (Putri & Santoso, 2024).

The economic contribution made by the pharmaceutical industry can be seen from the GDP growth of the pharmaceutical sub-sector, which over the past few years has fluctuated but still shows a positive trend as an indicator of the economic strength of this sector. Investment in the pharmaceutical sector also opens up opportunities for exports and the development of drug product innovation. In terms of public health, the pharmaceutical industry plays a role in providing access to medicines with guaranteed quality, safety, and efficacy in accordance with Good Manufacturing Practices (GMP) standards. This contributes to improving the quality of life and protecting public health at large (Anggriani et al., 2020).

However, the pharmaceutical industry in Indonesia faces challenges, such as dependence on imports of raw materials from abroad, which can hamper production in

the event of global supply disruptions. Government policies and market dynamics also affect the operations and sustainability of the industry.

The Indonesian government has taken various steps and policies to support the development of the national pharmaceutical industry, such as providing incentives, regulating drug prices in the National Health Insurance (JKN), and facilitating research and development of local products (Food and Drug Administration (BPOM), 2020) . However, the strict regulation of drug prices in JKN also poses its own challenges for manufacturers. Product innovation and research are important aspects that continue to be developed by the pharmaceutical industry, to increase competitiveness and meet the needs of domestic and international markets. The development of generic drugs, phytopharmaceuticals, and multivitamin products are examples of innovations that support public health as well as industry growth (R. Pratama & Sari, 2025) .

The contribution of the pharmaceutical industry to public health is not only in terms of drug supply, but also through its role in supporting government programmes and national health services. Large pharmaceutical companies such as PT Kimia Farma are examples of the integration of pharmaceutical industry services in integrated health services (Thorbecke, 2023) . Although the pharmaceutical industry has a significant positive impact, it still needs attention to negative impacts such as environmental pollution from production waste which must be managed responsibly so as not to harm the community and the surrounding environment. The balance between industrial growth and environmental sustainability is an important issue in the development of this sector.

This study examines the contribution of the pharmaceutical industry to economic growth and public health in Indonesia through a literature review, hoping to provide a comprehensive overview of the role and challenges of the sector and provide policy recommendations for sustainable development.

Research Methods

The research method used in this study is a literature review, namely by collecting, evaluating and analysing various sources of relevant scientific literature related to the contribution of the pharmaceutical industry to economic growth and public health in Indonesia. The literature search process was conducted through national and international journal databases such as Google Scholar and ScienceDirect, using keywords appropriate to the research topic (Elijah & Aslan, 2025) . Selected articles and documents were then selected based on the criteria of relevance, year of publication, and publication reputation. Data and findings from the collected literature were systematically synthesised to provide a comprehensive overview of the role, challenges and opportunities for the development of the pharmaceutical industry in supporting Indonesia's economy and public health (Bolderston ., 2008)

Results and Discussion

Contribution of the Pharmaceutical Industry to Economic Growth in Indonesia

The pharmaceutical industry is one of the strategic sectors in the Indonesian economy. This sector not only acts as a provider of medicines and medical devices, but also as a major driver of national economic growth. The pharmaceutical industry has been designated as one of the 10 priority industries in the National Industrial Development Master Plan (RIPIN) 2015-2035, confirming its position as a vital engine of economic growth (Y. Pratama & Sari, 2020).

The contribution of the pharmaceutical industry to the national Gross Domestic Product (GDP) continues to increase. In 2020, the pharmaceutical industry contributed 10.75% to the GDP of the non-oil and gas processing industry, up from 9.56% in the previous year. Even during the Covid-19 pandemic, when many other sectors experienced contraction, the pharmaceutical industry continued to grow positively and became one of the sectors that was able to survive and thrive (Wulandari & Prasetyo, 2024).

The growth of the pharmaceutical industry in Indonesia shows a fluctuating trend but tends to increase. Data from the Central Statistics Agency (BPS) and the Ministry of Industry recorded significant growth rates in the pharmaceutical industry, especially during the pandemic. In the third quarter of 2020, the growth rate of the chemical, pharmaceutical and traditional medicine industries reached 14.96%, driven by a surge in demand for medicines and health supplements (Indonesia.go.id, 2021).

The pharmaceutical industry also plays an important role in job creation. According to data from the Ministry of Industry, the pharmaceutical industry creates more than 200,000 direct jobs by 2022, with growth of around 5% per year. This shows the role of the pharmaceutical industry in reducing unemployment and improving people's welfare (Sulastri, 2023).

Investment in the pharmaceutical sector continues to increase, both from domestic and foreign sources. Indonesia is one of the fastest growing pharmaceutical markets in Asia, with a market value of around IDR 141.6 trillion in 2021. This growth is supported by the National Health Insurance (JKN) programme, increased consumption of generic drugs, and the expansion of national and multinational pharmaceutical companies (Ministry of Health of the Republic of Indonesia, 2021).

Indonesia's pharmaceutical industry has a large production capacity. With a total production capacity of 40 billion tablets per year, Indonesia is able to fulfil its domestic medicine needs independently. This reduces dependence on imports of finished medicines and strengthens the resilience of the national health sector. Indonesia's pharmaceutical product exports also show a positive trend. From January to September 2024, the export value of the pharmaceutical industry and natural medicine reached US\$ 639.42 million or around Rp 9.9 trillion. This expansion not only increases the country's

foreign exchange, but also strengthens Indonesia's position in regional and global pharmaceutical markets (Sebong et al., 2025).

The pharmaceutical industry is a crisis-resistant sector. During the Covid-19 pandemic, when many industrial sectors experienced a downturn, the pharmaceutical industry experienced a surge in demand and revenue growth. This proves that the pharmaceutical sector is highly resilient to global economic shocks. The increase in the number of pharmaceutical companies in Indonesia also fuelled economic growth. In 2015, there were 210 pharmaceutical companies, and this increased to 227 companies in 2020. This growth in the number of companies reflects the conducive business climate and promising investment potential in the pharmaceutical sector (Nugroho & Setiawan, 2023).

The pharmaceutical industry plays a role in the development of innovation and technology. Pharmaceutical companies in Indonesia actively conduct research and development of new products, such as generic drugs, phytopharmaceuticals, and vaccines. These innovations not only improve the competitiveness of the industry, but also provide significant economic added value. The pharmaceutical industry's contribution to state revenue also comes from taxes and levies. With growing sales and exports, the pharmaceutical sector has become one of the largest tax contributors in the non-oil and gas manufacturing sector, which in turn supports the financing of national development (National Committee for Sharia Economics and Finance (KNEKS), 2021).

The pharmaceutical industry supports the development of related sectors. The existence of the pharmaceutical industry encourages the growth of other sectors such as agriculture (provision of herbal raw materials), logistics, distribution, and health services. This synergy creates a multiplier effect for the national economy. The government provides various incentives and policy support to strengthen the pharmaceutical industry. Through Government Regulation No. 1010/2020, the government provides tax incentives, exemption from import duties on raw materials, and research support to encourage the growth of the local pharmaceutical industry. This policy aims to increase the competitiveness and independence of the national pharmaceutical industry (Sharma, 2024).

Overall, the pharmaceutical industry contributes greatly to Indonesia's economic growth. Aside from being a contributor to GDP, a job creator, and an export driver, the pharmaceutical industry also plays a role in improving people's quality of life through the provision of affordable and quality medicines. With a large market potential and strong policy support, the pharmaceutical industry is projected to continue to be one of the main pillars of Indonesia's economic growth in the future.

The Pharmaceutical Industry's Contribution to Public Health

The pharmaceutical industry in Indonesia plays a central role in improving public health through the provision of quality and affordable essential medicines. The availability of adequate drugs is the main foundation in efforts to prevent and treat various diseases, both infectious and non-communicable, so that people can obtain optimal health services (Kompas Research Team, 2024) .

Increased domestic drug production capacity has strengthened the resilience of the national health system, especially when facing crises such as the Covid-19 pandemic. The local pharmaceutical industry is able to fulfil domestic demand without relying too much on imports, so that drug distribution is maintained despite global supply chain disruptions (Ministry of Health of the Republic of Indonesia, 2021) .

The pharmaceutical industry's role is also seen in supporting government health programmes, such as the National Health Insurance (JKN). By ensuring the availability of generic and innovative drugs, the pharmaceutical industry helps expand people's access to effective and efficient treatment, while reducing health costs nationwide. Innovation in the development of pharmaceutical products, such as vaccines, phytopharmaceuticals and probiotics, is one of the industry's important contributions. Research and development conducted by national pharmaceutical companies has resulted in new products that are relevant to the health needs of the Indonesian people, including in the management of endemic tropical and infectious diseases (Fitch Solutions, 2025) .

Equitable distribution of medicines to all corners of the country is a challenge, given the vast territory of Indonesia. The pharmaceutical industry, together with the government and pharmaceutical workers, is working to ensure that medicines are accessible to remote areas, so that the health gap between urban and rural areas can be minimised (D. Sari & Prasetyo, 2025) . In addition to production and distribution, the pharmaceutical industry also plays a role in monitoring the safe and rational use of medicines. Pharmacists and pharmaceutical personnel provide education to the public on how to use drugs correctly, prevent side effects, and reduce the risk of antibiotic resistance due to improper use.

In a health emergency situation, such as a pandemic, the pharmaceutical industry moves quickly to produce and distribute the medicines and vaccines needed. Indonesia's success in producing the Covid-19 vaccine independently is clear evidence of the contribution of the pharmaceutical industry in maintaining public health and strengthening national independence in the Health sector (D. Sari & Pratama ., 2023)

The pharmaceutical industry also plays a role in supporting disease prevention efforts through the provision of vaccines and drugs to prevent infectious and non-communicable diseases. National immunisation programmes and public health campaigns rely heavily on the availability of quality pharmaceutical products. Improving people's quality of life is one of the positive impacts of the advancement of the

pharmaceutical industry. With better access to medicines and medical therapies, the life expectancy of Indonesians continues to increase, and the burden of disease can be significantly reduced (DPR RI, 2021) .

The pharmaceutical industry contributes to the development of human resources in the health sector. Through education, training and research, the industry encourages the birth of pharmaceutical personnel who are competent and ready to face future health challenges. Environmental challenges due to pharmaceutical waste are an important concern in the development of this industry. The green pharmaceutical approach and the application of environmentally friendly technology are expected to reduce the negative impact on the environment, so that the sustainability of the pharmaceutical sector is maintained (Lestari & Rahmah, 2022) .

Collaboration between the government, industry, academia, and society is needed to drive innovation and adoption of new technologies in the pharmaceutical sector. This synergy will strengthen the national health ecosystem and ensure that the healthcare needs of the community can be met sustainably. Government regulations and policies that support the growth of the pharmaceutical industry also play an important role in improving access and quality of health services. Incentives, quality control, and protection of local products are key factors in creating a resilient and independent health system (Lim & Rokhim ., 2020)

Overall, the pharmaceutical industry in Indonesia has contributed greatly to improving public health through the provision of quality medicines, product innovation, equitable distribution, drug use education, and support for national health programmes. By continuing to strengthen collaboration and innovation, the pharmaceutical industry will remain a key pillar in realising a healthy and prosperous Indonesian society.

Challenges and Opportunities for Pharmaceutical Industry Development

The pharmaceutical industry in Indonesia faces complex challenges amidst its rapid development and growth. One of the main challenges is the very high dependence on imported raw materials, where more than 90% of pharmaceutical raw materials are still imported from abroad, especially India and China. This dependence makes the industry vulnerable to global price fluctuations, supply disruptions, as well as changes in the policies of the country of origin of raw materials (Hanggraeni, 2021) . In addition, strict and frequently changing regulations are an obstacle for industry players. The long licensing process, complicated bureaucracy, and increasingly strict supervision from the Food and Drug Administration (BPOM) add to the operational burden of pharmaceutical companies. Compliance with product quality and safety standards also demands large investments in production and testing systems (Pisani et al., 2025) .

Increasing competition, both from multinational companies and imported products, requires the national pharmaceutical industry to continue to innovate and

improve efficiency. Imported products often offer more competitive prices and globally recognised quality, so local manufacturers must be able to compete through product innovation, cost efficiency and quality improvement. Another important challenge is the high cost of logistics and distribution, especially to reach remote areas in Indonesia. Uneven distribution infrastructure causes delivery delays and high operational costs, so access to medicines in remote areas is still a problem (Siagian et al., 2020).

The pharmaceutical industry also faces challenges in developing human resources (HR). The availability of skilled labour in research, production, and quality control is still limited. Relevant education and training is needed to create human resources that can compete at the global level.

The dynamics of the global economy, the national economic slowdown, and the decline in people's purchasing power have also affected the performance of the pharmaceutical industry. Economic uncertainty causes fluctuations in demand and requires companies to be more adaptive in managing product portfolios and marketing strategies. Another challenge arises from the aspect of halal certification of raw materials, which has become an important issue with the increasing awareness of Muslim consumers in Indonesia. This certification process adds complexity to the supply chain and production, especially for companies that still depend on imported raw materials (I. Sari & Pratama., 2022)

On the other hand, the opportunities for the development of the pharmaceutical industry in Indonesia are enormous. Population growth, increased health awareness, and the National Health Insurance (JKN) programme are driving demand for generic and innovative drugs. The government is also actively encouraging the use of generic drugs to reduce national health costs, opening up opportunities for local manufacturers to expand the market. The development of herbal and traditional medicines is a strategic opportunity, given the rich biodiversity of Indonesia. The abundant potential of natural materials can be utilised to develop phytopharmaceutical products and health supplements, which are increasingly in demand in both domestic and international markets (Kashuri., 2025)

Pharmaceutical product innovation and research, including the development of biotechnology-based drugs and biopharmaceuticals, are key to future competitiveness. The government and research institutions are increasingly active in encouraging research collaboration, development of production technology, and adoption of cutting-edge technology to improve the effectiveness and safety of pharmaceutical products. Another opportunity comes from the telemedicine sector and digitalisation of health services. The Covid-19 pandemic has accelerated the adoption of digital technology in the pharmaceutical sector, from online consultations, online drug distribution, to the utilisation of big data for research and new product development. This digitalisation opens up new markets and improves service efficiency (Nugroho & Setiawan, 2023).

The government has issued various policies to accelerate the independence of the pharmaceutical industry, such as fiscal and non-fiscal incentives, accelerated licensing, and support for research and development of local raw materials. The programme to accelerate the production of domestic drug raw materials is a priority to reduce import dependence and strengthen the resilience of the national health sector (Putri & Santoso, 2024).

Synergy between the government, industry, academia, and the agricultural sector is essential to support the development of the pharmaceutical industry. Utilisation of agricultural products as raw materials for drugs, strengthening the research ecosystem, and cross-sector collaboration will accelerate the achievement of independence and competitiveness of the national pharmaceutical industry (Anggriani et al., 2020).

Overall, although the pharmaceutical industry in Indonesia faces major challenges, future development opportunities are wide open. With the right policy support, continuous innovation, and cross-sector collaboration, Indonesia's pharmaceutical industry has the potential to become a key pillar in supporting economic growth and sustainable improvements in public health.

Conclusion

The pharmaceutical industry in Indonesia contributes significantly to national economic growth. The sector has not only been an important contributor to the Gross Domestic Product (GDP) through value addition, job creation, and investment growth, but has also shown strong resilience amidst the economic crisis, as seen during the Covid-19 pandemic. The pharmaceutical industry's consistent growth, increasing number of companies, and expansion of domestic and export markets confirm its vital role as one of the key pillars of the Indonesian economy.

From a public health perspective, the pharmaceutical industry plays a central role in ensuring the availability of quality, safe and affordable medicines. Through product innovation, generic drug development, and support for national health programmes such as the National Health Insurance (JKN), the industry helps to expand access to treatment and improve the quality of life of the community. In addition, the active role of pharmaceutical personnel in educating the rational use of medicines and monitoring distribution also strengthens the national health system.

Despite facing challenges such as dependence on imported raw materials and global competition, the opportunities for the development of the pharmaceutical industry in Indonesia are still very large. Government policy support, cross-sector collaboration, and increased research and innovation are key to strengthening the competitiveness and independence of this industry. Thus, the pharmaceutical industry is expected to continue to contribute sustainably in supporting economic growth and improving the health status of the Indonesian people.

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