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ANALYSIS OF ECONOMIC FACTORS AFFECTING THE GROWTH OF THE PHARMACEUTICAL INDUSTRY AND ITS IMPACT ON LABOUR ABSORPTION IN INDONESIA: A LITERATURE REVIEW

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Abstract
This study aims to analyse the economic factors that influence the growth of the pharmaceutical industry and its impact on employment in Indonesia through a literature review study. The pharmaceutical industry is one of the strategic sectors that continues to grow in line with the increasing public need for health products and government policy support. The study results show that investment, government policies, exchange rate fluctuations, dependence on imported raw materials, and technological innovation are the main economic factors that influence the growth of the national pharmaceutical industry. The growth of this sector has a positive impact on labour absorption, both directly in production and indirectly through supporting sectors such as distribution and research. However, challenges related to the quality of human resources and raw material independence still need to be overcome so that the pharmaceutical industry can contribute more optimally to the economy and job creation in the future.
Keywords: pharmaceutical industry, economic factors, growth, employment, literature review

Introduction

The pharmaceutical industry in Indonesia plays a strategic role in supporting the national health system and the country's economic growth. As a sector responsible for providing quality medicines, the industry is one of the main pillars in maintaining public health and supporting the achievement of sustainable development goals in the health sector. Along with the increasing population and public awareness of the importance of health, the demand for pharmaceutical products in Indonesia continues to increase from year to year (Dialectica ., 2025)

In the last five years, Indonesia's pharmaceutical industry has shown significant growth opportunities. Data shows that in the period 2015 to 2019, the number of pharmaceutical companies in Indonesia increased from 198 to 230 companies. This growth was driven by the high demand for medicines, especially during the COVID-19

pandemic which saw a surge in demand for vitamins, supplements, and medical devices (EFPIA, 2024) . In addition, the contribution of the pharmaceutical industry to the Gross Domestic Product (GDP) of the non-oil and gas processing industry has also increased, reflecting the vital role of this sector in the national economy (IFPMA, 2025) .

However, behind this growth, the national pharmaceutical industry still faces major challenges, especially in terms of dependence on imported raw materials. More than 90 per cent of the raw materials used in Indonesia still come from abroad, mainly from China, India and European countries5. This dependence causes the cost structure of drug production in Indonesia to be highly vulnerable to global price and supply fluctuations, and weakens the competitiveness of the national pharmaceutical industry in the international market (Intuition Labs, 2025) .

The Indonesian government has taken various strategic steps to reduce dependence on imports of drug raw materials, including by encouraging investment in the drug raw material (BBO) industry sector and strengthening domestic pharmaceutical technology research and development. This policy is expected to increase the independence of the national pharmaceutical industry, strengthen the domestic supply chain, and create greater added value to the national economy (DrugPatentWatch, 2025) . In addition to raw materials, regulatory dynamics and harmonisation of global standards are also important factors affecting the growth of the pharmaceutical industry in Indonesia. Regulatory changes, such as updates to the Good Manufacturing Practices (GMP) and adjustments to international standards, require the pharmaceutical industry to continuously adapt and improve the quality and efficiency of its production. These efforts are important so that Indonesian pharmaceutical products can compete in the global market and fulfil the public's need for safe, quality and efficacious medicines (WifOR Institute & IFPMA, 2024) .

Investment, both domestic and foreign, is also one of the main drivers of the growth of the pharmaceutical industry in Indonesia. Data shows that during the period 2010-2016, foreign direct investment (FDI) in the chemical and pharmaceutical sector reached USD 15.3 billion, making Indonesia one of the largest pharmaceutical markets in the ASEAN region. This investment not only encourages growth in production capacity, but also opens up opportunities for wider employment in the pharmaceutical sector (Kirchhoff et al., 2022) .

The growth of the pharmaceutical industry has a positive impact on labour absorption in Indonesia. As the number of companies grows and production capacity increases, the need for skilled labour in the pharmaceutical, chemical and technology fields also increases. This contributes significantly to reducing the unemployment rate and improving the welfare of the community, especially in regions that are the centre of the pharmaceutical industry (OECD, 2023) . However, human resource challenges are also a major concern. The pharmaceutical industry requires a workforce that is not only technically skilled, but also able to adapt to technological developments and changing

regulations. Therefore, human resource capacity building through education, training and certification is key to improving the competitiveness of the national pharmaceutical industry in the era of globalisation (Kusynová ., 2023)

In addition to the economic and employment aspects, the growth of the pharmaceutical industry also contributes to the development of research and innovation in the health sector. Collaboration between industry, government, and research institutions is needed to produce innovative pharmaceutical products that can meet the needs of the domestic and international markets . These innovations include not only the development of new drugs, but also improving the efficiency of the production and distribution process (Felton, 2021) .

At the global level, Indonesia's pharmaceutical industry still faces intense competition with major producing countries such as India and China. To compete, Indonesia needs to strengthen the pharmaceutical industry ecosystem, from the provision of raw materials, technology development, to improving product quality and distribution efficiency. This step requires synergy between various stakeholders, including the government, industry players, academics, and the community. With a large market potential and government policy support, Indonesia's pharmaceutical industry is expected to continue to grow and develop (Duarte, 2022) . However, this success is highly dependent on the industry's ability to overcome various structural challenges, such as dependence on imported raw materials, strengthening human resources, and adjusting regulations. Therefore, an analysis of the economic factors that influence the growth of the pharmaceutical industry and its impact on employment is crucial to provide appropriate and sustainable policy recommendations (IFPMA, 2025) .

This study aims to analyse the economic factors that influence the growth of the pharmaceutical industry in Indonesia and assess its impact on employment. By understanding the dynamics and challenges faced, it is hoped that the results of this study can contribute to the development of a more independent, competitive and inclusive national pharmaceutical industry.

Research Methods

The research method used in this study is the literature review method with a qualitative approach, where data and information are collected through literature studies from various sources such as scientific journals, official reports, books, and statistical data related to the pharmaceutical industry in Indonesia. The analysis was conducted by identifying and examining economic factors that influence the growth of the pharmaceutical industry and its impact on employment, using descriptive and comparative analysis techniques to examine the relationship between variables based on previous findings and relevant secondary data (Eliyah & Aslan, 2025) .

Results and Discussion

Economic Factors Affecting the Growth of the Pharmaceutical Industry in Indonesia

The growth of the pharmaceutical industry in Indonesia is strongly influenced by various economic factors that are interrelated and shape the dynamics of the sector. One of the main factors is investment, both domestic and foreign. Foreign investment still dominates the pharmaceutical sector, reaching around 62% of total investment in the 2015-2020 period, which is crucial for building production facilities, expanding distribution networks, and developing research and innovation in pharmaceutical products (StartUs Insights, 2025) .

Dependence on imported raw materials is a major challenge for the national pharmaceutical industry. More than 90 per cent of drug raw materials in Indonesia are still imported, mainly from China and India. This dependence makes the pharmaceutical industry highly vulnerable to global price fluctuations, supply chain disruptions, and changes in supplier country policies, so the government's efforts to reduce raw material imports still face major challenges, especially related to limited domestic production technology and capabilities (Nurjanah ., 2025)

Government policies and regulations also greatly influence the growth of the pharmaceutical industry. Drug price regulations, fiscal incentives, licensing deregulation, and the National Health Insurance (JKN) programme encourage increased demand for generic drugs and public access to health services. The government provides incentives for companies operating in Special Economic Zones (SEZs) and encourages the digitalisation of the pharmaceutical industry (Editorial Datanesia, 2024) . Fluctuations in the rupiah exchange rate and inflation rate have a direct impact on production costs and drug selling prices. As most raw materials are imported, a weakening rupiah will increase production costs, which in turn may affect drug prices in the domestic market. However, the inelastic demand for drugs makes the impact of inflation and exchange rates on pharmaceutical companies' profits relatively limited (Deloitte, 2025) .

The growth of the domestic market is the main driver of the pharmaceutical industry's expansion. Indonesia is the largest pharmaceutical market in Southeast Asia, fuelled by a large population and increasing health awareness. Drug sales in Indonesia are expected to continue to rise, with annual growth of nearly 10%. The JKN programme and the government's increased health budget are also expanding people's access to medicines (Krungsri Research, 2024) .

Indonesia's exports of pharmaceutical products are increasing, but the sector is still experiencing a trade deficit due to high imports of raw materials. Pharmaceutical exports are projected to continue to grow, but export market expansion efforts still face challenges of competitiveness and strict international quality standards. Technological developments, such as biotechnology, artificial intelligence (AI), and supply chain digitalisation, are important factors in improving the efficiency and

competitiveness of the pharmaceutical industry. Product innovation, including the development of drugs based on natural ingredients and biological therapies, opens up new opportunities for industrial growth in the era of the industrial revolution 4.0 (IBISWorld, 2025) .

Access to credit and working capital is critical for pharmaceutical companies, especially to fund production expansion and research. The capital market also acts as a source of funding, where pharmaceutical companies can raise funds through stock and bond offerings to strengthen capital and support business development. People's purchasing power affects the demand for pharmaceutical products, especially in the non-generic drugs and premium health products segments. A decrease in purchasing power due to inflation or an increase in fuel prices can suppress sales of certain pharmaceutical products, although demand for essential drugs remains stable due to its inelastic nature (Ostwald et al., 2020) .

The pharmaceutical market structure in Indonesia is dominated by a few large companies, while many smaller companies operate in specialised segments. Intense competition encourages companies to continuously innovate and improve production efficiency. Government regulations related to patents and drug prices also affect the dynamics of competition in this sector.

The implementation of the National Health Insurance (JKN) is increasing demand for generic drugs and expanding the domestic market. Pharmaceutical companies are competing to increase the production of generic drugs to meet the needs of JKN participants, who now cover more than 200 million Indonesians. The programme is also driving efficiency and price adjustments in the pharmaceutical industry. Utilising Indonesia's rich biodiversity to develop phytopharmaceutical products is one strategy to reduce dependence on imported raw materials. Products based on natural ingredients not only strengthen the local pharmaceutical industry, but also have the potential to increase exports and create added value for the national economy (ISPE, 2025) .

Digitalisation of production, distribution, and marketing processes improves operational efficiency and supply chain transparency. The adoption of digital technologies, such as the Internet of Things (IoT) and blockchain, helps pharmaceutical companies monitor production, manage inventory, and accelerate the distribution of products to the market. Adequate production capacity and supporting infrastructure, such as research facilities and laboratories, determine the pharmaceutical industry's ability to fulfil domestic and export demand. The government continues to encourage the construction of production facilities for raw materials and finished drugs to increase the industry's independence (CRA & EFPIA, 2024) .

The availability of skilled labour and research development are important factors in improving the competitiveness of the pharmaceutical industry. Collaboration between industry, government, and educational institutions is needed to produce

human resources that are able to adapt to technological developments and global regulations. Synergy between the government, industry players, and the community is essential to create an ecosystem conducive to the growth of the pharmaceutical industry. Policies that support innovation, investment incentives, and strengthening research will strengthen the competitiveness of Indonesia's pharmaceutical industry in regional and global markets (McKinsey, 2022) .

Thus, the above economic factors interact with each other and form the foundation for the growth of the pharmaceutical industry in Indonesia. By overcoming challenges and capitalising on opportunities, the national pharmaceutical industry is expected to grow more independent, innovative and highly competitive in the future.

Impact of Pharmaceutical Industry Growth on Labour Absorption

The growth of the pharmaceutical industry in Indonesia has had a significant impact on employment, both directly and indirectly. Along with the increasing demand for medicines and health products, the pharmaceutical industry is expanding, which encourages the creation of new jobs in various lines of production, distribution, to research and development. The increase in the number of pharmaceutical companies, both large and medium scale, has also expanded employment opportunities for the community, especially graduates of pharmacy, chemistry, biology, and other related fields (WifOR Institute & IFPMA, 2024) .

The growth of the pharmaceutical industry also drives the need for skilled labour capable of operating modern technology and keeping up with regulatory developments. Digital transformation and automation in the production process require an increase in workforce competence, so pharmaceutical companies are conducting a lot of HR training and development to increase productivity and operational efficiency (Juneja et al., 2024) .

Data shows that the number of workers in the pharmaceutical sector continues to increase from year to year. In 2023, the number of pharmaceutical workers was recorded at 59,698 people, up from 57,881 workers in the previous year. This increase is in line with the growth of investment in the pharmaceutical sector, which reached IDR 6.40 trillion in 2023, strengthening production capacity and expanding distribution networks. In addition to direct employment in factories and production facilities, the growth of the pharmaceutical industry also creates jobs in supporting sectors such as logistics, marketing, distribution, and healthcare. This expands the economic impact of the pharmaceutical industry on the wider community, especially in regions that are the centre of the national pharmaceutical industry (Christianingrum & Mujiburrahman ., 2021)

The increase in employment in the pharmaceutical industry is also driven by government policies, such as the National Health Insurance (JKN) programme that expands people's access to medicines. High demand for generic drugs and health

products encourages pharmaceutical companies to increase production capacity and recruit more labour (Fitriyani et al., 2022) . However, the growth of the pharmaceutical industry also presents challenges in terms of labour quality and competence. There are still many pharmaceutical workers who do not have specialised skills according to industry needs, such as quality management, pharmaceutical regulation, and biotechnology. This requires synergy between industry, government, and educational institutions to improve the quality of human resources through education, training, and certification (Alghamdi, 2023) .

Labour productivity in the pharmaceutical industry showed an increasing trend during the 2011-2019 period, in line with the growth in the number of companies and industry value added. This increase in productivity reflects the important role of labour in creating quality and competitive pharmaceutical industry output. In addition, the growth of the pharmaceutical industry also contributes to the reduction of unemployment rates, especially in areas that are centres of pharmaceutical production. As the number of companies and production facilities grows, the need for labour at various levels, ranging from production operators to managers, increases (NAM, 2023).

The positive impact of pharmaceutical industry growth on labour absorption can also be seen from the increasing interest of pharmaceutical graduates to work in the industrial sector. Broad job prospects and career development opportunities are the main attraction for the younger generation to pursue the pharmaceutical and healthcare fields (Viseven ., 2025)

On the other hand, the pharmaceutical industry's dependence on imported raw materials remains a challenge that can affect the stability of employment. Fluctuations in the price and supply of imported raw materials can have an impact on company operations and, ultimately, on the amount of labour that can be absorbed.

The government continues to encourage the strengthening of the domestic drug raw material industry to increase the independence and stability of the pharmaceutical industry. This effort is expected to create new jobs in the upstream sector and strengthen the national supply chain. In addition to the economic aspect, the growth of the pharmaceutical industry also has an impact on the development of research and innovation in the health sector. Collaboration between industry, government, and research institutions opens up job opportunities for experts in the field of research and development of innovative pharmaceutical products (Petrov et al., 2020) .

Increased employment in the pharmaceutical industry also contributes to the improvement of community welfare. With stable employment and clear career prospects, the pharmaceutical industry is one of the sectors that can improve the standard of living of the community, especially in industrial areas. However, to maintain sustainable growth and employment, the pharmaceutical industry needs to continuously adapt to technological developments and global regulations. Sustainable

human resource development is the key to facing challenges and taking advantage of opportunities in the industrial era 4.0 (Hermanto & Sutrisno, 2021) .

Overall, the growth of the pharmaceutical industry in Indonesia has had a significant positive impact on labour absorption, both directly and indirectly. Increases in the number of companies, production capacity, and investment in the sector have been the main drivers of new jobs and increased labour productivity.

Thus, the growth of the pharmaceutical industry in Indonesia has had a positive impact on labour absorption, marked by an increase in the number of workers, productivity, and employment opportunities in various related sectors. However, challenges in terms of human resource quality, dependence on imported raw materials, and technological adaptation must continue to be overcome so that the pharmaceutical industry can continue to be a sustainable economic driver and job creator in the future.

Conclusion

The growth of the pharmaceutical industry in Indonesia is strongly influenced by various economic factors, such as foreign and domestic investment, government policies, exchange rate fluctuations, and dependence on raw material imports. Foreign investment still dominates the sector, while supportive government policies, such as fiscal incentives and the National Health Insurance (JKN) programme, have helped drive industry expansion. However, challenges such as dependence on imported raw materials and the need for technological innovation are still major obstacles that must be overcome in order for the pharmaceutical industry to grow more independent and competitive.

The impact of pharmaceutical industry growth on employment is significant. The increase in the number of companies and production capacity creates new jobs, both directly in the production sector and indirectly in supporting sectors such as distribution, logistics and research. In addition, digital transformation and automation in the pharmaceutical industry demand an increase in labour competence, so training and human resource development are key to maintaining the productivity and competitiveness of the industry.

Overall, the literature review analysis shows that the growth of the pharmaceutical industry in Indonesia has contributed positively to employment and the national economy. However, to sustain this growth, continuous efforts are needed to improve the quality of human resources, strengthen raw material independence, and encourage innovation and investment in the pharmaceutical sector. Synergy between the government, industry players, and educational institutions is essential to create a competitive and inclusive pharmaceutical industry ecosystem in the future.

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