Analysis of Strategy Determination for Increasing the Competitiveness of the Active Pharmaceutical Ingredients Industry in Indonesia

Anwar Wahyudi¹, Iha Haryani Hatta², Shirly Kumala³

¹,²,³Pancasila University

Article Info

Article history:
Received June 2023
Revised June 2023
Accepted June 2023

Keywords:
Competitiveness
Pharmaceutical Industry
Active pharmaceutical ingredients Industry
Strategy

ABSTRACT

The active pharmaceutical ingredients industry is an infant industry in Indonesia. Efforts to carry out development have been made but have not been able to achieve the expected competitiveness so far. It is realized that competitiveness is an important part that can encourage the development of the active pharmaceutical ingredients industry, so it is important to develop a useful strategy to develop the industry as expected. The formulation of the strategy is based on the statements of 16 experts who have experience in the pharmaceutical field in Indonesia. The analytical method used is descriptive qualitative analysis. The final results show that the government plays an important role in encouraging industrial development and increasing its competitiveness, so that it can ultimately encourage other industries.

This is an open access article under the CC BY-SA license.

Corresponding Author:
Name: Anwar Wahyudi
e-mail: anwarw.fm@gmail.com

1. INTRODUCTION

Competitiveness is said to be a concept that is closely related to the global economy which is very relevant in the era of globalization. Competitiveness refers to the ability of a country, industry or company to compete effectively in international markets [1]. This involves the ability to produce products or services at competitive prices, high quality, good production efficiency, continuous innovation, and adaptive flexibility to market changes.

In a constantly changing and competitive global environment, the level of competitiveness of a country or industry becomes an important factor in determining economic growth, job creation, investment and people's welfare. Countries and industries that are able to improve their competitiveness tend to experience higher growth, attract foreign investment, and have better access to international markets [2].

Factors that affect competitiveness can vary, including government policies, adequate infrastructure, quality human resources, access to technology, production efficiency, trade regulations, innovation, as well as sustainability and corporate social responsibility [3]. Therefore, a deep understanding of these factors and the right strategy to increase competitiveness is important for governments, companies and other stakeholders.
Currently the pharmaceutical industry is one of the industries that gets a lot of attention. This is because the pharmaceutical industry has an important role and is a global scale industry. It is known that pharmaceutical products globally have continued to increase from 2000 to the present. In 2014, pharmaceutical products have increased more than 5 times both in terms of imports and exports from 2000. European and American countries are the dominant players in the world pharmaceutical market. North America sells at least 44.5% of total world pharmaceutical sales, while Europe is 25.3%, Latin America is 4.7%, Japan is 8.9%, and Africa and Japan are 16.6% where in 2014, world pharmaceutical revenue at that time amounted to 1.12 trillion USD.

The global pharmaceutical market was valued at nearly $1,217.1 billion in 2019, increasing at a Compound Annual Growth Rate (CAGR) of 6.7% since 2015. The market is expected to fall from $1,217.1 billion in 2019 to $1,209.6 billion in 2020 at a rate of -0.6%. This decline was mainly due to movement restrictions and social distancing imposed by various countries in slowing the rate of transmission of Covid-19, which resulted in an economic slowdown. The market is expected to recover and grow at a CAGR of 8.5% from 2021 and reach $1,738.2 billion in 2023, $2,050.9 billion in 2025 and $3,206.3 billion in 2030 (The business research company, 2020).

The Organic Fuel Industry (API) is part of the pharmaceutical industry which has received many issues to increase its competitiveness due to facing challenges in increasing its competitiveness in the global market. It is realized that currently the API industry is controlled by China and India, so this is a big challenge to develop a strategy in order to be commensurate in the industry. Therefore, research is needed to find a strategy capable of increasing the competitiveness of the API industry in Indonesia.

2. METHODS

This research was conducted in January 2022-December 2022 which involved 16 stakeholders from various backgrounds, namely the Legislature, government institutions, the API industry, research institutions and practitioners. This is done in order to obtain a comprehensive description of effective strategies to increase the competitiveness of the API industry in Indonesia. In-depth interviews were conducted with key informants and other informants to validate them using the triangulation method. In qualitative research, validity & reliability tests or data credibility tests are carried out when data is collected, with a tool called triangulation. The data triangulation method is to confirm between data obtained from in-depth interviews (interview data) with data obtained from observations (observation data) and/or data obtained from study/document review (secondary data) [4]. [5] defines triangulation as a technique for checking the validity of data that utilizes something else.

The analytical method used in this research is descriptive qualitative. Descriptive method is a research approach used to describe and explain existing phenomena systematically. This method aims to describe the characteristics, properties, or relationships between variables in a population or sample (Sugiyono 2010). While the qualitative approach is aimed at generalizing from the sample to the population, being confident with the results and measuring the magnitude of a phenomenon or differences between groups. From qualitative data, we understand the views and personal experiences of participants in a study, understand these views in a context or setting, and present the complexity of a phenomenon [4].

3. RESULTS AND DISCUSSION

The strategy determination method uses the IE matrix and QSPM approach. This is intended to get a quantitatively specific picture. [6] explained that the EFE and IFE analysis methods were able to provide a
provide formulas for carrying out and implementing grow and build strategies. The government is advised to implement an intensive strategy and or an integrative strategy. [9] explain that in a grow and build strategy one has to grow intensively, start diversifying and acquire other companies. In the results of the IE matrix or the company's position, namely grow and build, according to [8], at least three main strategies must be carried out, namely:

1. Market penetration
2. Market Development
3. Product Development

The decision-making stage as the final stage uses Quantitative Strategic Planning Matrix (QSPM) analysis, which is a tool that allows strategists to objectively evaluate alternative strategies, based on previously identified critical internal and external success factors. Strategy selection with QSPM is done by looking for the highest TAS (Total Attractiveness Score). TAS value is calculated by the formula Weight × AS. The AS value is obtained from the results of a survey on respondents using a priority scale from 5 most priority to 1 not priority. So the biggest score as the first choice strategy. TAS results can be seen in the following table:

Table 1. Total Attractive Score for the Development Strategy for the Active pharmaceutical ingredients Industry in Indonesia

<table>
<thead>
<tr>
<th>Stage</th>
<th>Time period</th>
<th>Duration</th>
<th>Strategy Name</th>
<th>Total Attractive Score *)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Short</td>
<td>1 year</td>
<td>1. Formation of the Coordinating Team for the development of the active pharmaceutical ingredients industry</td>
<td>3.31</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Compilation of regulations Increasing the competitiveness of the API industry in Indonesia</td>
<td>3.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Development of supporting industries in fulfilling domestic medicinal raw materials.</td>
<td>3.55</td>
</tr>
<tr>
<td>2</td>
<td>Short-Medium</td>
<td>2-3 years</td>
<td>1. The government is investing in integrated API research and production infrastructure</td>
<td>3.30</td>
</tr>
</tbody>
</table>
2. Evaluation of production protection regulations and competitiveness of domestic medicinal raw materials. 3.65

3. Formation of a team in order to coordinate and evaluate the implementation of industrial development and the competitiveness of medicinal raw materials through various instruments 3.11

4. TKDN optimization as the main requirement for JKN procurement 2.70

5. Price incentives for medicinal raw materials 2.87

<table>
<thead>
<tr>
<th>Stage</th>
<th>Time period</th>
<th>Duration</th>
<th>Strategy Name</th>
<th>Total Attractive Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Intermediate</td>
<td>3-5 years</td>
<td>1. Utilization of natural resources in the development of natural raw materials</td>
<td>3.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Maximize the domestic market</td>
<td>3.76</td>
</tr>
<tr>
<td>4</td>
<td>Long</td>
<td>&gt; 5 years</td>
<td>1. The Ministry of Health is the leading sector in mapping natural and human resources</td>
<td>3.37</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. JKN is the key to maintaining a large market share</td>
<td>2.94</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Capacity building for Skilled HR in updating API development technology</td>
<td>3.17</td>
</tr>
</tbody>
</table>

Based on the generation of alternative strategies and position analysis, the determination of the appropriate strategy to be implemented is sorted based on the time horizon. For the short term, the weakness-threats (WT) strategy is used, for the short-medium term, the weakness-opportunity (WO) strategy is used, the medium-term strengths strategy (ST) is used, and the long-term strengths-opportunity (SO) strategy is used. Based on the calculated QSPM matrix, the results are obtained with a Total Attractive Score (TAS). Based on the strategy reformulation that has been carried out, the strategy is selected according to the time horizon as shown in table 2.

Table 2. Priority Strategies for Development of Active pharmaceutical ingredients Industry in Indonesia Based on Total Attractive Score (TAS)

<table>
<thead>
<tr>
<th>Stage</th>
<th>Time period</th>
<th>Duration</th>
<th>Strategy Name</th>
<th>Total Attractive Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Short</td>
<td>1 year</td>
<td>1. Compilation of regulations Increasing the</td>
<td>3.17</td>
</tr>
<tr>
<td>Stage</td>
<td>Time period</td>
<td>Duration</td>
<td>Strategy Name</td>
<td>Total Attractive Score</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
<td>----------</td>
<td>-------------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>competitiveness of the API industry in Indonesia</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Short-Medium</td>
<td>2-3 years</td>
<td>1. TKDN optimization as the main requirement for JKN procurement.</td>
<td>2.70</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Price incentives for medicinal raw materials.</td>
<td>2.87</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Formation of a team in order to coordinate and evaluate the implementation of industrial development and the competitiveness of medicinal raw materials through various instruments.</td>
<td>3.11</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. The government is investing in integrated API research and production infrastructure.</td>
<td>3.30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Evaluation of production protection regulations and competitiveness of domestic medicinal raw materials.</td>
<td>3.65</td>
</tr>
<tr>
<td>3</td>
<td>Intermediate</td>
<td>3-5 years</td>
<td>1. Utilization of natural resources in the development of natural raw materials.</td>
<td>3.60</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Maximize the domestic market.</td>
<td>3.76</td>
</tr>
<tr>
<td>4</td>
<td>Long</td>
<td>&gt; 5 years</td>
<td>1. JKN is the key to maintaining a large market share</td>
<td>2.94</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Capacity building for Skilled HR in updating API development technology</td>
<td>3.17</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. The Ministry of Health is the leading sector in mapping</td>
<td>3.37</td>
</tr>
</tbody>
</table>
The competitiveness improvement model can be analyzed using the Diamond Porter approach. This refers to [10] where the establishment of a model will make it easier to find the characteristics of an industry in a country. [11] explains that this model is very comprehensive to provide a description of the value of industrial competitiveness in international competition.

The results of the comparative study and interview results obtained a strategic model for increasing the competitiveness of the raw material development industry. It is known that the government's role in the development of the infant industry is very large and influences the development of other factors. There are 5 important factors in industrial development besides the government's role, namely: 1) industry, 2) research institutions, 3) conditions, 4) investment, and 5) market. From the entire series of research and the formulation of the strategy, a draft model of the strategy and the role of the government was obtained in the development of the active pharmaceutical ingridients industry in developing countries. The model is named "Wahyudi model" can be described as follows:

![Figure 2. Wahyudi API Industrial Competitiveness Improvement Strategy Model](image)

From the above model, it is described that national competitiveness is influenced by industrial competitiveness. The increase in industrial competitiveness is influenced by 6 factors. The basic concept of the above model is to try to provide a description of each factor, namely:

1. **Government Role**
   - In the development of industries that are just starting to grow, the government's role becomes very dominant in influencing various other determinant factors. The role of government influences markets, research institutions, investment and national and global conditions, research institutions and industry. This role is primary. Without the government's role, the infant industry will not be able to grow and compete in the domestic and global markets. The government's roles include:
     a. Regulation; preparation of regulations that favor the domestic industry
     b. Stakeholder interconnection; where the government acts as a catalyst both between ministries and with industry/private sector.
     c. Infrastructure; The government builds joint infrastructure that can facilitate the raw material industry thereby reducing production costs.
     d. Health Security or JKN is the main market key which can become a definite market managed by the government.
     e. E-Procurement; This government procurement is able to become the main market for the active pharmaceutical ingridients industry by imposing requirements on the use of drugs with domestically produced medicinal raw materials.
     f. National conditions; National conditions include a conducive economic and investment climate as well as the national and global political situation.

2. **Market**
   - There are 3 markets that influence the development of the active pharmaceutical ingridients industry in Indonesia, namely the national/domestic market, the global market and the government market. These three
markets have their own segments which individually or collectively can affect the competitiveness of the pharmaceutical raw material industry. It is known that the API industry in Indonesia is an infant industry, where protection is an important thing that needs to be done. [12] provides evidence that America protects imported products for the infant industry in their country. On the other hand, market protection is a differential treatment for developing countries [12].

3. Research institute
Research and development collaboration with research institutions and universities is the best collaboration for national pharmaceutical companies to develop raw materials and drugs that can increase industrial competitiveness. Independent research carries high risks because the success rate of new drug discoveries is unpredictable. To encourage this, the government must act as a mediator to foster mutually beneficial cooperation between the pharmaceutical industry and research centers at various universities [13]. Factors included in this research institution are research scale (basic research, pilot scale, industrial scale), research priorities, research resources. [14] explained that industrial development can progress rapidly if a country supports research activities, this can happen because the research activities carried out are directed at obtaining appropriate (effective and efficient) results and increasing economic value.

4. Investment
Included in these determinants are facilities provided by the government including joint facilities and industrial areas, joint ventures to attract investors, and incentives provided by the government. Incentives in the form of fiscal and non-fiscal incentives that support industrial development are urgently needed.

[15] explains that there are several variables that are considered to play a role in encouraging inward investment in developing countries. These include 1) market size, 2) inflation rate, 3) labor productivity, 4) infrastructure facilities, 5) trade openness, 6) political stability and 7) appropriate policies and regulations in time.

5. Industry
In increasing competitiveness, industrial factors become one of the determining factors. Included in the industrial determinants are the pharmaceutical formulation industry, the active pharmaceutical ingredients industry, supporting industries and industrial technology. In this case the development of industrial harmonization is a must, development should not only be directed at the drug formulation industry which is already strong enough, but needs to be directed towards upstream development (development of the medicinal raw material industry, petrochemical industry and excipient industry). The impact of this condition will provide a significant boost to advancing and increasing overall competitiveness.

6. Condition Factors
Condition factors include the resources owned by a nation, economic conditions, politics and global conditions. The condition factor is a macro factor that must always be considered, in this case the central government needs to always get input and be aware of all changes that occur. All decisions must be careful and directed towards domestic industrial and economic progress.

Judging from the determinant factor of increasing the competitiveness of the raw material industry in Indonesia, it can be described as follows:

From the results of the research above, it can be described the relationship between factors in increasing the competitiveness of the raw material industry as follows:
The active pharmaceutical ingridients industry in Indonesia is an infant industry that has only grown in the last 5 years. From its condition as an infant industry and its inability to compete with imported products, it is imperative for the government to intervene and play a major role in the development of the active pharmaceutical ingridients industry in Indonesia from all sectors. The main objective of the government’s role is to make the active pharmaceutical ingridients industry in Indonesia attractive. The government’s role is broken down into the following strategy:

1. Compilation of regulations
   Increasing the competitiveness of the API industry
   Government regulations or policies need to be drafted at the law level, so that they become guidelines for the government, industry and investors as well as all parties involved in the development of the active pharmaceutical ingridients industry.

2. Supporting industry development
   It is necessary to build a basic chemical industry that supplies basic chemicals and intermediate raw materials for the manufacture of medicinal raw materials, so as to reduce production costs

3. Strengthening research infrastructure
   Formation of research infrastructure consisting of issuing policies on strengthening research facilities from upstream to downstream, increasing the capability of reliable research human resources, building research centers, global cooperation in joint research to gain national benefits in the utilization of research results. This can be exemplified in the implementation of clinical trials of new drugs and vaccines. The government needs to increase the research budget of at least 5.6% of GDP to catch up in the research sector.

4. Increased investment in the pharmaceutical raw material industry
   With the low profitability of the active pharmaceutical ingridients industry, the government must invest money to build or provide subsidies for the domestic active pharmaceutical ingridients industry in order to be able to increase the competitiveness of companies which will ultimately increase national competitiveness. In addition, the government can create a conducive investment climate so as to attract foreign investors to enter Indonesia, among others by tax breaks, the establishment of Special Zones and ease of licensing.

5. Application of incentives and disincentives
   The implementation of existing fiscal incentives needs to be reviewed to stimulate industry growth, for example by providing tax reductions, optimizing tax holidays, cheap land rents and in the long term, facilitating licensing for the development of the active pharmaceutical ingridients industry in Indonesia. It is necessary to apply disincentives in the form of imposing maximum taxes and import duties on raw materials that can already be produced domestically.

6. Domestic market protection
   This market protection can be in the form of applying commodity balances, closing imports, applying TKDN threshold instruments for domestically produced drugs in government procurement. The reduction in imported drugs in the e-catalog for drugs that have been produced with medicinal raw materials domestically will increase production and will ultimately make the prices of medicinal raw materials competitive globally which will ultimately increase the attractiveness of the medicinal raw material industry.
CONCLUSION

The API industry in Indonesia is very likely to develop, but in the process the role of the government is in developmentindustrial infancy very large and affect the development of other factors. There are 5 important factors in industrial development besides the government's role, namely: 1) industry, 2) research institutions, 3) conditions, 4) investment, and 5) market. Consistent government initiatives will continuously encourage all factors to move together which will ultimately encourage the development of the API industry in Indonesia.

REFERENCE