Halal Obligation on Chemical Products 2026 in Indonsia: Implications of Article 39 of 2021 in the Regulation of Imported Products from China

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Abstract. This research discusses the mandatory halal certification for chemical products in Indonesia, which will be implemented in 2026, focusing on the implications of Article 39 of Government Regulation Number 39 of 2021 on imported products from China. Chemical products are essential in various industrial sectors, such as pharmaceuticals, cosmetics, food, and beverages. China is the leading supplier of chemicals to Indonesia, with around 80.4% of supplier companies needing halal certification. Challenges faced include the need for halal certification for imported materials and the complexity of the chemical production process. This research uses the PESTEL analysis method to identify political, economic, social, technological, environmental, and legal factors that influence the implementation of this regulation. The results show that strategies are needed to overcome obstacles and take advantage of opportunities, such as bilateral cooperation, improving infrastructure, innovation in halal chemicals, and developing an efficient supply chain management system. This research aims to provide an in-depth understanding of the impact of these policies and formulate adaptation strategies for related industries.

Keywords: Chemical, Halal, China, PESTEL Analysis, Strategy

1 Introduction

Halal products have profound significance in Indonesia, the country with the second-largest Muslim population in the world. Halal products reflect compliance with Islamic religious teachings and are considered an indicator of food quality and safety for Muslim consumers (Faridah, 2019). Increasing Muslim consumers' awareness of halal products has encouraged the Indonesian government to strengthen regulations and supervision related to halal certification. This includes food and beverage products, cosmetic products, medicines, and chemicals used in everyday life. This effort aims to ensure that every product circulating on the market meets halal standards set by Islamic law to provide a sense of security and comfort for Muslim consumers in Indonesia (Prayuti, 2020)

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Apart from the religious aspect, halal products also play an essential role in the Indonesian economy. Halal certification has become a significant added value for local and imported products that want to compete in domestic and international markets.(Desika & Ulinnuha, 2023). A halal certification enhances the competitiveness of Indonesian products in international markets, particularly in regions with significant Muslim populations. Additionally, the growing demand for halal products drives the expansion of Indonesia's halal industry, spanning sectors such as tourism, finance, and manufacturing. (Sayekti, 2020). Therefore, the importance of halal products is not only limited to the religious aspect but also has a significant economic impact on the country.

Halal regulations in Indonesia have experienced significant developments over the last few decades and reached their peak with Law UU no. 33 of 2014 concerning Jaminan Produk Halal (JPH) (Istikomah, 2019). This law is the legal basis that stipulates halal certification obligations for all products entering and circulating in Indonesia, including food, drinks, medicines, cosmetics, and chemical products. This law aims to protect the community as Muslim consumers from non-halal products and to provide legal certainty for producers and business actors. The implementation of the JPH Law has been accompanied by the establishing of the Badan Penyelenggara Jaminan Produk Halal (BPJPH), which is responsible for the certification and supervision of halal products throughout Indonesia. (Khairuddin & Zaki, 2021)

In Indonesia, the obligation to certify halal chemical products is rooted in the Halal Product Guarantee Law (UU No. 33 of 2014), which mandates that all products, including chemicals, must be certified halal to ensure safety and compliance with Islamic principles. This law aims to protect Muslim consumers by providing legal certainty regarding the halal of the products they use or consume. (Muhajarah & Hakim, 2021). Since the implementation of Law UU No. 33 of 2014, various derivative regulations and technical guidelines have been issued to strengthen Indonesia's halal product guarantee system. One of the essential regulations is Government Regulation No. 39 of 2021, which is the implementation and implementation regulation of Law Number 33 of 2014 concerning JPH. This government regulation regulates the implementation of Halal Product Guarantees in more detail. This policy has also clarified the responsibilities of various parties in the halal certification process and increased transparency and accountability. (Mubarak et al., 2023)

Meanwhile, the halal concept in China is less popular than in Indonesia. Halal certification only applies to meat, milk, and vegetable oil foods. The Chinese government prohibits expanding the halal concept to other fields outside the field of halal food. (Hong & Kamaruddin, 2020). Halal certification in China is more commercial and aimed at meeting export market demand, especially in countries with large Muslim populations, such as Indonesia and Middle Eastern countries. The halal certification process in China focuses more on food safety aspects and does not always involve religious institutions directly.

China is the largest exporter of chemical raw materials in Indonesia. China still dominates as the country of origin for Indonesia's non-oil and gas imports in January 2024, with a market share of 34%. (BPS, 2024) The value of chemical imports from China, which reached USD 471.4 million in January 2023, significantly contributes to total non-oil and gas imports. From this data, 90% of medicinal raw materials (BBO) are imported, including from China (Ministry of Industry, 2024). Meanwhile, 85% of

The raw materials for cosmetics are imported, and the most significant portion also comes from China (Nababan, 2023). The Ministry of Industry data shows that around 60-65% of the raw materials used by the food and beverage industry, both large and small, are imported from China. According to data from the Halal Product Guarantee Agency (BPJPH), as of July 20, 2023, there were 1,200 chemical product companies from China exporting to Indonesia. Of the total, 145 companies have obtained halal certification, while 1,055 companies do not yet have a halal label. The ratio between companies that have not been halal certified compared to those that have been approved is 80.4% that have not and 19.6% that have halal. This figure shows that most chemical product companies from China that export to Indonesia still need halal certification (Latif & Nurwahidin, 2023).

This research needs to be carried out because China is one of the leading exporters of chemical products in Indonesia, and it plays a crucial role in various industrial sectors, including pharmaceuticals, cosmetics, food, and beverages. With the implementation of halal certification obligations in 2026, many chemical exporting companies from China still need to meet halal requirements, as shown by data that states that most chemical products imported from China still need to be halal certified. This condition poses a severe challenge for Indonesia in regulating the chemical supply chain by the halal standards imposed by the government. This research is essential to understand the impact of these regulations and develop strategies to help suppliers from China and Indonesian importers adapt to new policies so that chemical trade continues running smoothly without violating regulations.

2 Problem formulation

- How does PP Number 39 of 2021 affect the halal obligations of imported chemical products from China?
- What are the challenges and opportunities the industry faces related to this regulation?
- What strategies can be implemented to overcome challenges and take advantage of these opportunities?

3 Research Purposes

- We are analyzing the implications of PP Number 39 of 2021 on imported chemical products from China.
- Analyze the challenges and opportunities faced by related industries using PESTEL analysis.
- Develop relevant strategies for the industry in dealing with mandatory halal regulations for imported chemical products from China.

4 Methodology

This research uses a qualitative method and a literature study approach to collect and analyze relevant data. The primary data source comes from statutory regulations such as Law No. 33 of 2014 and PP Number 39 of 2021 and other related rules relating to halal regulations, international trade, and import policies. In addition, the research utilized scientific journals, articles, and reports to gain an in-depth understanding of the context and trends related to the importation of chemical products from China. Statistical data regarding chemical imports and industry reports were also analyzed to strengthen the study results. Interviews with industry players are also conducted to enrich the data with direct perspectives from those involved in the sector.

The collected data was analyzed to identify critical chemical import policy and practice issues. The analysis was carried out using the PESTEL analysis method, which was used to formulate strategies based on political, economic, social, environmental, and applicable legal observations. We classified them based on the strengths, opportunities, and challenges faced by Indonesia and China. Then, a strategy will be prepared based on this analysis. This approach aims to formulate a plan to increase the effectiveness of import policies and the competitiveness of Indonesian products in the global market while minimizing the risks of dealing with dependence on chemical imports.

5 Literature Review

The concept and principles of halal certification in Islam are rooted in sharia, which emphasizes the importance of consuming and using products that comply with halal rules, as stated in the Al-Qur'an and Hadith. Halal means "permitted" or "allowed" and covers product aspects from raw materials, production processes, and distribution.(Hidayat & Siradj, 2015). The halal certification process aims to ensure that products consumed by Muslims are free from haram substances, such as pork, alcohol, and other ingredients that are prohibited according to Islamic law. This certification not only applies to food and drinks but also to products such as cosmetics, medicines, and

chemicals that may come into contact with the final product consumed by humans.(Khairuddin & Zaki, 2021).

The principle of halal certification is also based on maqashid sharia, namely the objectives of sharia, which include the maintenance of religion (hifz ad-din), soul (hifz an-nafs), reason (hifz al-aql), descendants (hifz an-nasl), and property (hifz al-mal). In this context, halal certification protects Muslim consumers' rights in ensuring their products comply with religious principles (Ahmad, 2024). Halal certification bodies such as MUI in Indonesia play a crucial role in this process, ensuring that all stages of production, from raw materials to distribution, follow strict halal rules. With this certification, religious interests and economic and ethical aspects are protected, where halal-certified products have more value in the market, increasing competitiveness and consumer confidence. (Muhtadi, 2020)

Halal certification regulations in Indonesia are one of the government's efforts to ensure that products circulating on the market comply with Islamic law.(Esfandiari & Al-Fatih, 2022) The dominant Muslim population in Indonesia drives this, so the need for halal products is very high. Halal certification ensures consumers, especially Muslims, that the products consumed or used are halal. (Aziz et al., 2019) Based on Law Number 33 of 2014 concerning Halal Product Guarantee (JPH), all products circulating in Indonesia, whether food, medicine, cosmetics, or other goods, must have a halal certificate if they are related to the needs of Muslim consumers. (Dinisa Hanifa et al., 2023; Khairuddin & Zaki, 2021)

The halal certification process in Indonesia involves several stages, including applying for certification by business actors, product inspection by the Halal Inspection Institute (LPH), and a halal fatwa issued by the Indonesian Ulema Council (MUI). After that, a halal certificate is issued by the Halal Product Guarantee Organizing Agency (BPJPH). This regulation covers various aspects, from the supply of materials processing to product distribution. Apart from that, the government also pays attention to Micro, Small and Medium Enterprises (MSMEs) by initiating a Free Halal Certification program through a mechanism *self-declare* for business actors who meet the requirements(Kasanah & Sajjad, 2022) (Kasanah & As Sajjad, 2022).

Along with the development of the halal industry, regulations related to halal certification continue to undergo changes and adjustments. For example, Government Regulation Number 39 of 2021 concerning implementing the Halal Product Guarantee Sector emphasizes simplifying certification procedures, especially for MSMEs.(Kasanah & Sajjad, 2022) This initiative seeks to accelerate the certification process while fostering greater awareness of the significance of halal labeling. Government Regulation Number 39 of 2021 on the Implementation of Halal Product Assurance marks a crucial step in the Indonesian government's commitment to ensuring accessible halal products for consumers. The regulation provides a comprehensive framework, covering everything from defining halal products and streamlining the certification process to overseeing

market compliance. One of the critical points in this Government Regulation is expanding the scope of products that must be certified halal, including chemical products. This shows the government's commitment to protecting the rights of Muslim consumers in choosing products that are by their religious beliefs. (Mubarak et al., 2023)

Implementing PP Number 39 of 2021 certainly brings numerous challenges, especially for chemical products industries. One of the main challenges is related to the complexity of the halal certification process for chemical products. Apart from that, the additional costs that business actors must incur to obtain halal certification are also a consideration. However, this regulation also allows the industry to develop innovative halal products and meet growing market needs (Latif & Nurwahidin, 2023).

In contrast, China has a stringent policy in maintaining its culture, especially by using Mandarin characters as an integral part of its cultural identity. Halal certification in China is not regulated by one national regulation but varies by region. This is influenced by the "Chineseization of Religion" policy ordered by President Xi Jinping in 2015, which aims to prevent the influence of religious extremism from outside and to make local religions more accommodating to traditional Chinese culture (Zhou, 2022).

The Chinese government has also begun to replace the use of the halal logo with Arabic characters "حلال" with Mandarin characters "清真" (qingzhen), which also means halal. Although the two symbols have been used together, there is a trend that Mandarin characters will be the only halal logo used in the future. However, China does not yet have a nationally applicable halal certification standard, and each region has a local agency responsible for verifying the halal status of a product (Zhou, 2022).

To obtain halal certification, manufacturers in China must apply for permission from the local ethnic and religious bureau that manages halal food. This process includes verifying whether the business meets the requirements set by local laws. However, there is no national law that comprehensively regulates halal certification.

In 2023, China will remain Indonesia's largest trading partner, with bilateral trade value exceeding $127 billion (Press, 2024). The two countries enjoy strong economic relations, especially in trading commodities such as palm oil, coal, and various manufactured products. This collaboration shows China's important role in the Indonesian economy and confirms Indonesia's dependence on the largest export market in Asia. Indonesia's dependence includes chemical products as raw and auxiliary materials.

Chemical products play an essential role in various industries in Indonesia, including those related to halal products. Industries that process food, beverages, cosmetics, pharmaceuticals, and chemical-based goods must follow strict halal regulations. A critical aspect of this regulation is ensuring that the chemicals used in the production process do not contain haram or unclean elements. For example, products that contain ingredients from pork or alcohol that are not by sharia provisions must be avoided or specially processed to meet halal standards (Dinisa Hanifa et al., 2023).

Chemical products are defined and classified based on their composition, function, and application. They can be categorized into single species, blends, formulated, and functional products(Shiyang, 2021). Broader classifications include basic chemicals, industrial products, and consumer-configured products, distinguishing between homogeneous and structured products based on the nature of use. (Dimian & Alexander, 2014) In addition, toxicological classification is essential for safety, involving regulations for labeling and packaging to inform users of the dangers (Rosa & Larrañaga, 2005).

Indonesia's halal chemical industry operates under multiple regulations, including Law No. 33 of 2014 on Halal Product Assurance (JPH).This law explains that chemical products used in multiple industries, both raw materials and additional materials, must undergo a halal certification process. This process ensures that the product is safe for Muslims to consume and use. Halal certification assures consumers that the products they use are chemically safe and by the religious values they adhere to.(Fadzlillah et al., t.t.)

According to Article 1 of Law No. 33 of 2014 According to the Halal Product Assurance Law (UU JPH), products encompass goods and services consumed or utilized by the public, including food, beverages, medicines, cosmetics, chemical products, biological products, genetically modified products, and consumer goods. This is further reinforced by Article 4, which mandates that all products entering, distributed, or traded within Indonesia must obtain halal certification. So, it has become urgent for chemical companies to be able to prepare and organize strategies for halal certification. Then, the time of obligation in PP No. 39 of 2021 concerning the Implementation of Halal Product Guarantees, article 141, regulates the stages of halal certification obligations for chemical products from 17 October 2021 to 17 October 2026. (PP No. 39 of 2021). Among these chemical products are those used in food products, beverages, pharmaceuticals, cosmetics, personal needs such as soap, and consumer goods.

Chemical industries that produce goods such as beverages, food, cosmetics, medicines, and pharmaceutical products have unique challenges in ensuring the halalness of their products. This is because many chemicals are critical and must be audited in depth. It must be assured that every material used in the manufacturing process is not sourced from haram materials or processed using equipment that comes into contact with haram materials. This certification process is valid domestically and an essential requirement to penetrate the global market, which prioritizes halal products. (Hakim & Anggraeni, 2023)

Issues related to the safety and quality of halal chemical products are often associated with the raw materials used and production processes that must comply with sharia provisions. One of the main challenges is ensuring that chemicals used in various industries, including cosmetics, pharmaceuticals, and food, do not contain haram or unclean elements, such as ingredients derived from pork or alcohol, which is not permitted in Islamic law.(Wulansari & Anggraini, 2018) Pharmaceutical products, for example, have faced several cases where pork DNA was found to be present in medicines, which

has caused concern among Muslim consumers. This shows that strict supervision and certification are needed to ensure the safety and quality of products on the market (Esfandiari & Al-Fatih, 2022).

Another challenge is the limited alternative halal raw materials, especially in the pharmaceutical and cosmetics industries, which often rely on imported materials from countries that need to consider halal aspects.(Hakim & Anggraeni, 2023) The difficulty in obtaining halal-certified raw materials causes producers to conduct in-depth research on the materials they use, which requires a lot of time and money. Moreover, the production process must separate facilities between halal certified products and those that are not, thus adding complexity to maintaining the safety and quality standards of halal products.(Desika & Ulinnuha, 2023)

Over the last few years, Indonesia has relied heavily on imports of chemical products from China. The Bamboo Curtain country has become the leading supplier of various types of chemicals used in multiple industries in Indonesia, from the food, beverage, pharmaceutical, and cosmetics to manufacturing industries. High domestic demand, which domestic production cannot fully meet, encourages Indonesia to import chemical products from China**.** Several factors that drive this high level of imports include the relatively competitive prices of chemical products from China, the availability of various products, and easy access to trade between the two countries.(Puspandari et al., 2022)

The ASEAN-China Free Trade Agreement (ACAFTA) has significantly influenced trade patterns between Indonesia and China, including in the chemical products sector. One of the direct impacts of ACAFTA is the increase in imports of chemical products from China to Indonesia. This is caused by several factors, including:

- **Elimination of tariffs:** ACAFTA reduces or removes import duties on most chemical products, enhancing the competitiveness of Chinese chemical products in the Indonesian market.
- **Simplified trade processes:** ACAFTA streamlines customs procedures and technical regulations, making it more convenient to import chemical products from China.
- **Boosted investment:** ACAFTA promotes greater Chinese investment in Indonesia, including in the chemical industry, potentially increasing domestic production while heightening reliance on raw materials and components from China (Muliawati, 2016).

The import value of chemical products with the HS 28 code has continued to increase since 2019, which shows stable growth, with an average growth percentage reaching around 8-11%. The primary commodities imported, such as raw fertilizer materials, textile dyes, preservatives, food and beverage chemicals, cosmetics, and pharmaceuticals, show the diversity of industrial needs in Indonesia for chemicals from China. This increase in import value also illustrates the dependence of Indonesia's domestic industry

on the supply of essential chemicals for strategic sectors, including agriculture, food and beverages, pharmaceuticals, textiles, and cosmetics.

Imports of chemical products in Indonesia include compounds from minerals (inorganic) and living things (organic). These compounds are essential in various industries, from food pharmaceuticals to cosmetics. Inorganic chemicals, such as sodium bicarbonate and plastics, are commonly used in the food, packaging, and everyday goods industries. Organic chemicals, such as glucose, acetic acid, and ethanol, are also widely used in various industries, including food, pharmaceuticals, and cosmetics. In addition, other categories of chemicals do not fall into the inorganic or organic groups, such as propylene glycol and polyethylene glycol. These chemical products are raw materials, additives, or active ingredients in various final products. Demand for chemical products continues to increase with the development of multiple industries in Indonesia.(Latif & Nurwahidin, 2023)

In line with increasing demand, the Indonesian government has issued regulations requiring halal certification for chemical products used in food, beverages, pharmaceuticals, cosmetics, and other goods. This aims to ensure the safety and quality of products consumed by the public. The importation of chemical products in Indonesia is diverse and essential for various industrial sectors. With halal certification regulations, business actors in the chemical industry need to adjust their business strategies to remain competitive and meet growing market needs (Puspandari et al., 2022)**.**

PESTEL analysis is a strategic tool to understand various external factors influencing an organization or industry. PESTEL is an abbreviation for Political (politics), Economic (economic), Social (social), Technological (technology), Environmental (environment), and Legal (law). Organizations can use this analysis to identify opportunities and challenges from these external factors.(Mahadiansar & Aspariyana, 2020) PESTEL analysis helps in strategic planning by revealing trends and changes in the external environment that may impact business operations or industry regulations. Political factors, for example, are related to government policy, while economic factors include economic growth, inflation, and market conditions. Social aspects highlight demographic and cultural trends, while technology focuses on innovations that impact business processes. Environmental factors consider sustainability issues, and legal aspects concern regulations and laws that affect the industry (Fasa et al., 2022).

The choice of PESTEL analysis for research entitled "Halal Obligation on Chemical Products 2026 in Indonesia: Implications of Article 39 of 2021 in the Regulation of Imported Products from China" is because this research involves many external factors that influence the implementation of mandatory halal policies in the chemical products sector. PESTEL provides a comprehensive framework to analyze how political factors, such as government regulations on halal certification and legal factors from PP Number 39 of 2021, will affect this industry. Additionally, economic factors are important in understanding the financial impact of mandatory halal certification on companies that import chemicals. Social factors are also relevant due to the increasing awareness of

Muslim consumers towards halal products, while technological and environmental aspects focus on innovation and the impact on production processes. With PESTEL analysis, this research can thoroughly identify the challenges and opportunities faced by the chemical industry in meeting halal requirements in 2026.

6 Results and Discussion

China still dominates as the country of origin for Indonesia's non-oil and gas imports in January 2024, with a market share of 34%. This shows that Indonesia's dependence on products from China is still relatively high. This indicates that trade relations between Indonesia and China are getting closer, and demand for Chinese products in Indonesia continues to increase. This can be presented in the diagram below.

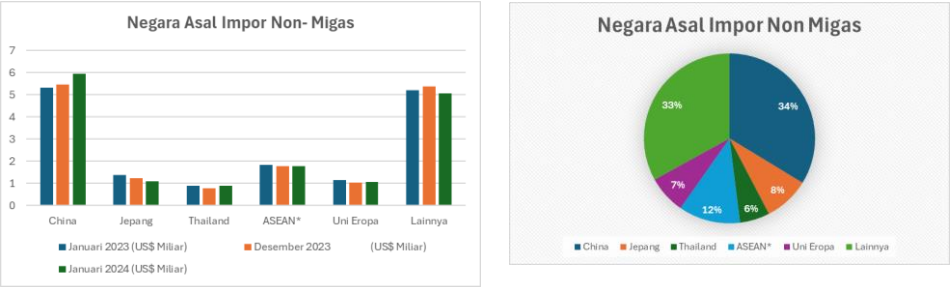

Figure 1. Diagram of country of origin for non-oil and gas imports (BPS, 2024)

The trend of increasing imports from China shows positive dynamics in trade relations between the two countries. Various factors, such as competitive prices, good product quality, and easy market access, can cause an increase in demand for Chinese products in Indonesia (Lucky, 2020). Apart from that, Chinese investment in Indonesia has also helped increase bilateral trade. However, high dependence on one major supplier country also has potential risks.

Based on data from *Badan Pusat Statistik* (BPS) Indonesia, which has been processed, it can be concluded that China is still one of Indonesia's leading suppliers of chemicals. The value of chemical imports from China, which reached USD 471.4 million in January 2023, significantly contributes to total non-oil and gas imports. From this data, 90% of medicinal raw materials (BBO) are imported, including from China (Ministry of Industry, 2024). Meanwhile, 85% of the raw materials for cosmetics are imported, and the most significant portion comes from China (Nababan, 2023). The data from The Ministry of Industry noted that around 60-65% of the raw materials used by the food and beverage industry, both large and small scale, are imported from China. The predominant raw materials and auxiliary materials belonging to inorganic and organic chemicals are imported, which shows that Indonesia's industry is very dependent on these materials for production and manufacturing processes. This indicates China's critical role in Indonesia's chemical industry supply chain.

According to data from the Halal Product Guarantee Agency (BPJPH), as of July 20, 2023, there were 1,200 chemical product companies from China exporting to Indonesia. Of the total, 145 companies have obtained halal certification, while 1,055 companies do not yet have a halal label. The ratio between companies that have not been halal certified compared to those that have been approved is 80.4% that have not and 19.6% that have halal. This figure shows that most chemical product companies from China that export to Indonesia still need halal certification (Latif & Nurwahidin, 2023).

Even though China is the leading supplier of chemicals for Indonesia, many exporting companies in that country still need to have halal certification. This situation has several vital implications, including:

- **Potential of Non-Halal Products** The number of Chinese companies that have not been halal certified is higher than that of those that have shown the risk of non-halal chemical products entering the Indonesian market. This can cause problems for industry players who prioritize products by the standard rules of the Halal Product Guarantee System (SJPH). (Nurmalasari, 2022)
- **Barriers to Regulatory Implementation:** This fact also highlights the challenges in implementing halal certification regulations on imported products, especially from countries with large export volumes like China (Aziz et al., 2019).
- **Opportunities for the Halal Industry:** This imbalance creates opportunities for Indonesian companies to develop halal chemical products that can compete with imported products while simultaneously encouraging the growth of the domestic halal industry (Istikomah, 2019).

Government Regulation No. 39 of 2021 requires that all chemical products produced or imported as raw materials in Indonesia's food and beverage, cosmetics, and pharmaceutical industries be certified halal (Nandini, 2021). This significantly impacts the production process because producers must ensure that the raw materials used do not contain haram elements.(Wulansari & Anggraini, 2018) Product distribution is also affected because product halalness is supervised more strictly in domestic and import supply chains. This strict supervision requires separate production facilities for halal and non-halal products and certification for the production equipment (Hasan, 2015).

One of the main challenges in obtaining halal certification is the complexity of the chemicals used in production.(Syaffira & Sw, 2024) Many chemicals come from other countries that may not comply with halal standards, such as China, the largest exporter of chemicals to Indonesia. Another challenge is the lack of halal certification bodies abroad that comply with Indonesian standards, thus prolonging the certification process.

Therefore, it is necessary to analyze challenges and opportunities through the PESTEL analysis below.

Table 1. PESTEL analysis

POLITICAL	ECONOMY	SOCIAL
• The Indonesian government actively supports the halal industry by issuing regulations such as PP Number 39 of 2021, which requires halal certification for chemical products. • The requirement for halal certification for imported products, including chemical products from China, is part of the government's political commitment to protect Muslim consumers. • Close trade relations between Indonesia and China provide opportunities for harmonization of halal certification policies between the two countries. • Regulations Law No.33 of 2014 and PP No. 39 of 2021 also aim to improve product safety standards in Indonesia, protecting consumers from products that do not meet halal standards. • A change in President also means a change in government, which could lead to policy changes in the future that could affect the implementation of	• Halal certification requires additional costs for companies, which can affect product prices and competitiveness in the market. • Increasing demand for halal products can encourage the growth of the halal chemical industry in Indonesia. • The Indonesian chemical industry is highly dependent on imported chemicals, especially from China, so this regulation could affect supply stability. • Halal certification can increase the competitiveness of Indonesian chemical products in the global market, especially in Muslim countries. • Many chemical companies must invest in new production infrastructure to meet halal standards, such as separating halal and non-halal products. • Dependence on imported raw materials makes domestic industries vulnerable to exchange rate fluctuations, which can increase production costs. • Global economic uncertainty can	• Increasing awareness of Muslim consumers about the importance of halal products influences demand for certified chemical products. • Consumers are increasingly choosing safe and halal products, not only for food but also for chemical products used in everyday life. • Adjusting production processes according to halal standards can affect the workforce in the chemical industry, especially in terms of training and knowledge about halal. • Indonesia, as a country with a Muslim majority, sees halal as an essential value that must be adopted in all aspects of consumption, including chemical products. • The public demands more transparency from companies regarding the raw materials used in the production process in the food and beverage, cosmetics, and

regulations, mainly if they occur. • The formation of the Halal Product Guarantee Administering Body (BPJPH) under the Ministry of Religion has a crucial role in implementing halal certification, which will also influence the political decision-making process. • There is potential political pressure from the chemical industry, which rejects this regulation because it is considered a burden on the production and distribution process. • Support and cooperation from MUI, as the first institution to carry out halal certification in Indonesia, is needed to strengthen the implementation of halal certification policies in trade regulations. • Halal regulations issued by the Indonesian government must be by and in line with international trade agreements to avoid violating trade agreements. • The government needs to tighten the supervision of imported chemical products to ensure all products meet halal requirements.	significantly affect demand for halal products if consumer purchasing power decreases. • The government can provide incentives such as tax cuts to support chemical companies that will export halal products to Indonesia. • Halal certification allows companies to diversify markets and reduce dependence on the domestic market. • Arranging the supply chain by halal standards requires additional transportation and distribution costs. • The market potential for halal products is significant in Indonesia, with the largest Muslim population in the world. • The large volume of chemical products imported from China creates opportunities for halal products. • Investment is needed to build more LPH-LN in China.	pharmaceutical industries. • Consumers are increasingly adopting a halal lifestyle, expanding demand for halal chemical products in various sectors, such as cosmetics and pharmaceuticals. • Consumers' perception that halal-certified products are safer and of higher quality encourages companies to meet these standards. • Consumer education regarding halal chemical products still needs to be improved so that more consumers understand the importance of halal certification. • Halal products tend to be associated with more environmentally friendly and ethical products. • Companies that invest in halal certification can improve their image of social responsibility, which is essential for their reputation.

• Each region in China has regional regulations relating to halal certification regulations. • Communication and cooperation between the Chinese and Indonesian governments regarding halal certification still need to be improved.		
TECHNOLOGY	**ENVIRONMENTAL**	**LEGAL**
• Using the latest technology in the production process can help companies ensure that their products meet halal standards. • Research and development to find halal chemical substitutes will be a challenge and opportunity for companies. • Digital technology can speed up halal certification by providing a more efficient audit and verification system. • Blockchain technology in the supply chain can help track and verify the chemicals' halalness. • Artificial intelligence (AI) in halal audits can be used to speed up and increase the accuracy of the halal audit process in the chemical industry, both domestically and abroad. • The discovery of halal alternative chemicals can	• Companies need to think about the environmental impact of chemical production processes that are halal certified, such as chemical waste that may not be halal. • There is increasing awareness that halal products should also be environmentally friendly, creating a new standard for the industry. • Halal certification can also encourage companies to use halal and environmentally friendly chemicals. • Companies must comply with halal regulations and be committed to environmental preservation in their production processes. • The chemical industry must think of ways to manage chemical waste safely and by halal and environmentally friendly standards.	• UU no. 33 of 2014 and PP no. 39 of 2021 provide a solid legal basis for requiring all chemical products circulating in Indonesia to have halal certification by 2026. • There are provisions regarding sanctions for companies that do not comply with halal certification obligations, which can be fines or distribution bans. • The authority of the Halal Product Guarantee Administering Agency (BPJPH) and the Indonesian Ulema Council (MUI) in issuing and supervising halal certification of chemical products has been strengthened. • PP Number 39 of 2021 provides legal

help the chemical industry adapt to halal regulations without sacrificing product quality. • A technology-based supply chain management system can make it easier for companies to ensure compliance with halal standards. • Innovative packaging technology can be used to ensure that products remain halal during distribution. • Developing an information system that provides easy access to halal certification can increase the efficiency of the certification process. • Technology plays a vital role in the research and development of halal chemical products that comply with Sharia standards.	• Clean chemical production technology can help companies meet halal standards while preserving the environment. • The halal chemical industry can be promoted by adopting renewable energy in its production process. • In addition to halal regulations, companies must comply with increasingly stringent environmental regulations, especially in the management of chemicals. • There is potential for halal certification to develop into one emphasizing environmentally friendly principles.	certainty for business actors regarding halal requirements so that they can plan business adaptation better. • This regulation introduces stricter licensing and regular audit procedures to ensure that chemical products comply with halal standards. • Companies must have a complete documentation system regarding raw materials, production processes, and distribution to meet halal certification standards. • There are strict legal provisions in Indonesia against labeling products that claim to be halal without official certification, which can result in criminal sanctions. • Halal certification regulations in China still need to be applied nationally. • There is a regulation that halal logos cannot be written in Arabic characters but must be written in Mandarin characters. • An institution regulates halal certification in every region in China,

		namely the Chinese Islamic Association. • There is a threat from regulatory changes in China that could hamper the halal certification process. • The ASEAN-China Free Trade Agreement (ACAFTA) brings benefits to both countries

Based on **PESTEL analysis,** I tried to classify them based on challenges and opportunities as follows:

6.1 Challenge:

1. Halal certification increases production and distribution costs by involving audits, testing, and infrastructure changes.
2. Halal certification for chemical products is more complicated than for food products, mainly because many chemicals are imported from countries that still need to have halal standards.
3. The Indonesian chemical industry is very dependent on imported chemicals from China, not all of which have halal standards.
4. Challenges in ensuring that chemical waste produced complies with environmental standards and is halal.
5. Separate production infrastructure for halal and non-halal products requires quite a significant investment.
6. Dependence on imports makes raw material costs vulnerable to exchange rate fluctuations.
7. There is a lack of understanding among exporting countries, especially China, about the importance of halal certification in Indonesia.
8. Implementation of regulations requires strict supervision to ensure no contamination between halal and non-halal products.
9. The global economic crisis can affect consumer purchasing power and the stability of the halal chemical supply chain.
10. Instability in halal certification policies can disrupt business actors' adaptation.

6.2 Chances:

1. Increasing consumer awareness about halal products can encourage the growth of the halal chemical industry in Indonesia.

2. Opportunity to collaborate with China to harmonize halal standards for imported products.
3. Halal certification allows Indonesian chemical products to be exported to other Muslim countries.
4. Using new technology in halal chemical production can increase efficiency and effectiveness in the certification process.
5. Government support is provided through subsidies or incentives for halal certification in the chemical industry.
6. Halal-certified products from Indonesia have the opportunity to be recognized in the global market, increasing their reputation as producers of halal products.
7. Consumer awareness of the importance of halal products is increasing, creating a broader market.
8. Companies can innovate to create halal chemicals that replace materials that do not meet halal standards.
9. Opportunities to develop transparent and technology-based supply chain management systems, such as blockchain.
10. The global halal industry is growing rapidly, providing great expansion opportunities for halal chemical products.

6.3 Strategy for Facing Mandatory Halal Chemical Products in 2026

Infrastructure and Technology Improvement

Investment in infrastructure that separates production facilities for halal and non-halal products is an essential step in complying with halal standards in Indonesia. (Jafar dkk., 2021) Separate infrastructure is required to ensure no cross-contamination between halal and non-halal products during production. This includes managing different production facilities, special storage areas, and tools and equipment only used to produce halal products. These adjustments require a significant financial commitment from the company, and consumers provide greater quality assurance (Kusnadi et al., 2023). By separating production facilities, companies can more easily meet stringent halal certification requirements, which can ultimately expand their markets both domestically and internationally. Apart from that, the Indonesian and Chinese governments can collaborate in building LPH-LN institutions in several regions in China so that they are spread evenly, making it easier for business actors from China to carry out halal certification according to Indonesian standards.

In addition to infrastructure investments, using technologies such as blockchain can help increase transparency and efficiency in the halal chemicals supply chain (Bux dkk., 2022). Blockchain enables secure and transparent tracking of every stage in the supply chain, from procurement of raw materials to delivery of the final product. This technology creates a more efficient audit system and reduces the risk of counterfeiting or errors in the production and distribution. In the context of halal certification, blockchain can be used to record and verify any information related to the origin of raw

materials and production procedures that comply with halal standards.(Kusnadi et al., 2023) Thus, the application of blockchain not only increases efficiency but also builds consumer confidence in halal products in an increasingly competitive market.

Bilateral Cooperation and Harmonization of Halal Standards

Building strategic cooperation with major exporting countries such as China is a crucial step in harmonizing halal standards and ensuring the supply of raw materials that comply with halal requirements in Indonesia(Lausepa, 2020). China, as one of the largest exporters of chemicals to Indonesia, has a key role in meeting the need for raw materials for the national chemical industry. To ensure compliance with Indonesian halal standards, the two countries must work together to harmonize regulations, certification, and product quality monitoring. This step can be carried out through bilateral dialogue involving the government, certification bodies, and industry players from both countries so that the halal certification process can be accelerated and the sustainability of the halal raw material supply chain can be guaranteed.

In addition, strengthening Indonesia's diplomatic position in fighting for global halal standards through international trade agreements is a vital strategy to increase Indonesia's influence and competitiveness in the global market. Rahman & Wahyuni (2019) stated that by fighting for halal standards in international trade agreements, Indonesia can play a bigger role in determining global policies regarding halal products. This effort will not only increase Indonesia's bargaining power in trade negotiations but also ensure that halal products, including chemicals, can compete in an international market that increasingly recognizes the importance of halal certification. By expanding halal diplomacy, Indonesia can facilitate easier access to halal export products in other countries' markets while strengthening strategic trade relations.

Halal Chemical Product Innovation

Encouraging companies to research and develop halal chemicals is a strategic step to replace non-halal materials and meet growing market demand. Research on halal chemicals allows for innovations that increase product competitiveness in the global market. Apart from that, the government needs to play an active role by increasing the allocation of research funds and providing incentives for companies that focus on developing halal chemical products. Government incentives will speed up innovation and encourage more companies to invest in research, producing products that comply with halal standards. With in-depth research and financial support from the government, Indonesia can strengthen its industrial position by providing competitive halal chemicals.

Efficient Supply Chain Management

Developing a supply chain management system based on digital technology is very important to ensure the separation of halal products from non-halal

products during the distribution process. Digital technology can increase efficiency and transparency in supply chain management so that halal products are maintained throughout the distribution channel from the country of origin to the consumer. Implementation of information technology allows real-time product tracking and tighter supervision of distribution by halal standards . This technology not only makes monitoring more accessible but also assures consumers that the products they receive have gone through a safe and Sharia-compliant distribution chain. With a sophisticated system, companies can minimize the risk of contamination and increase consumer confidence in the halalness of their products.

Human Resources Education and Training

Providing training programs for the workforce is a crucial step to ensure a deep understanding of halal certification and its production requirements. This training will equip the workforce with the knowledge and skills to comply with halal standards, ultimately increasing efficiency and product quality. Apart from that, encouraging collaboration with educational institutions can improve human resources (HR) competency in the halal chemical industry. This collaboration can create a more skilled and knowledgeable workforce, capable of supporting innovation and growth in the halal chemical sector. With proper training and collaboration with educational institutions, the industry can ensure that its human resources can meet the demands of international regulations and standards.

Increased Consumer Awareness and Education

Carrying out consumer education campaigns about the importance of using halal-certified chemical products is a strategic step to increase public awareness and understanding. This education aims to provide transparent information about the benefits of halal products, not only in religious aspects but also in terms of health and safety (Farida,2019 To expand its reach, involving the media and influencers can effectively spread this message to a wider audience. Media and influencers have a significant influence in shaping public opinion, so they can help increase awareness of the importance of choosing halal-certified products in everyday life. With this approach, it is hoped that consumers will be more selective and support the use of halal chemical products, thereby creating higher demand for products that meet sharia standards.

Development of Incentive Policy and Government Support

Encouraging the government to provide tax incentives or subsidies for exporting or importing companies in Indonesia that invest in halal certification is an important step in encouraging more companies to get involved. This incentive will help reduce the significant cost burden of obtaining halal certification so that more companies, especially in the chemical sector, can meet the requirements. In addition, improving coordination between related

institutions, such as the Halal Product Guarantee Organizing Agency (BPJPH) and the Indonesian Ulema Council (MUI), can speed up the halal certification and audit process.(Khairuddin & Zaki, 2021) Better coordination will create a more efficient system, minimize bureaucratic obstacles, and ensure that halal certification can be obtained more quickly and easily. With the support of incentives and effective coordination, it is hoped that companies will be more motivated to invest in halal certification, strengthening the national halal industry.

7 Conclusion

Implementing mandatory halal certification for chemical products in Indonesia in 2026, based on Government Regulation No. 39 of 2021, presents significant challenges for the industry, especially for imported products from China. Most imported chemicals from China still need to get halal certification, indicating a high risk for the sustainability of the chemical industry supply chain in Indonesia. China is the leading supplier of chemicals to Indonesia. However around 80.4% of companies from China do not yet have halal certification, thus creating significant challenges in the certification process. However, this regulation also opens up opportunities for local industries to develop more competitive halal chemical products, as well as encourages the growth of the halal industrial sector as a whole.

Despite the many challenges faced, such as difficulties in obtaining halal raw materials and the high costs of meeting halal standards, this regulation provides opportunities for local producers to expand their domestic and international markets. Collaboration between the government and the private sector is necessary to overcome implementation obstacles and take advantage of existing opportunities to make Indonesia a significant player in the halal chemical products industry.

So that halal regulations for chemical products can be implemented effectively, the Indonesian government is advised to strengthen bilateral cooperation with China in harmonizing halal standards and speeding up the certification process for imported products. In addition, there is a need to improve infrastructure and technology, such as the use of blockchain to ensure supply chain transparency and provide incentives for industries that invest in the development of halal chemical products. Training and education regarding the importance of halal also need to be expanded so that all stakeholders can understand and fulfill the applicable requirements.

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