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ISSUES AND WAY FORWARD FOR THE MALAYSIAN HALAL PHARMACEUTICAL MARKET

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Abstract: The market for certified Halal products is expanding rapidly, both domestically and internationally, with Malaysia emerging as the world's leader and reference point. As the forefront of the global Halal fraternity thanks to the tireless efforts of the Halal Industry Development Corporation (HDC), Malaysia has been widely regarded as the gold standard across the Islamic world, which is a critical component in promoting the Halal industry to the rest of the world. Thus, the goal of this study is to investigate the issues and way forward for Malaysian halal pharmaceutical market. The method of this study is through literature review analysis. Pharmaceutical companies should indeed focus on product innovation in addition to standards. For the time being, they are primarily focused on developing halal alternatives for existing medications. Future growth will be dependent on thinking "halal first" and developing products for the Muslim consumers.

Keywords: certified Halal products, pharmaceutical companies, halal pharmaceutical market, Halal industry, "halal first"

2.1. Introduction

Pharmaceutical products deal with various components of materials or substances, and their entire manufacturing process is more critical than food products. The concept of halal is also applied to pharmaceutical products. A halal certification scheme for pharmaceuticals is required to inform Muslim consumers and patients that products are prepared according to halal standards. Halal products can be identified using the halal certification system. Pharmaceutical is associated with the manufacture of medicines and drugs, as well as pharmaceutical companies. Pharmaceuticals are defined, in Malaysian Standard MS 2424, as pharmaceutical products in finished dosage forms, which include both prescription and non-prescription medicinal products for human use that are registered with the Drug Control Authority, Ministry of Health Malaysia. Biopharmaceuticals (including vaccines, recombinant products, monoclonal antibody products, gene therapy products, and so on), radiopharmaceuticals, health supplements, traditional medicines, and investigational drugs are some examples. Pharmaceutical products contain ingredients permitted under shariah law and *fatwa*, which are:

- i- Do not contain any non-halal animal parts or products, or any animal parts or products that are not slaughtered according to sharia law and *fatwa*;
- ii- Do not contain *najs* according to sharia law and *fatwa*;
- iii- Are safe and efficacious for human use according to the prescribed dosage, quality, and hygiene.
- iv- Are not prepared, processed, or manufactured using equipment contaminated with najs, according to shariah law and *fatwa* (Latiff, 2022).

2.2. Global and Malaysian Halal Pharmaceutical Market

The global halal pharmaceutical market is set to be worth US\$174 billion by 2025. A regulated framework that directs the halal certification process or pharmaceutical items has been established by nations with most Muslims. The Halal industry continues to

show resilience due to its strong fundamentals amidst the current volatility of crude oil prices and the COVID-19 crisis. With the spread of COVID-19 in early 2020, which is thought to have originated from animals, the cleanliness and quality of consumable products are now more crucial than ever. Various efforts have been made to make sure that consumable products conform to halal regulations, from product standardisation to halal certification (Kasri, Ahsan, Widiatmoko & Hati, 2021). The need for credible information and data considered a necessity. It was originally forecasted that by 2020, Malaysian annual Halal exports would reach an estimated RM50 billion (Edge Market, 2020). With the COVID-19 pandemic sharpening the focus on improving health and immunity, International Trade, and Industry Minister Datuk Seri Mohamed Azmin Ali, said that Malaysia could see a further surge in the sector's growth through public-private partnerships in the launch of new Halal-certified drugs and medical devices (MIDA, 2021).

As far as the prominent players in this industry are concerned, The Asia Pacific region appears to be in the lead when it comes to the production, manufacturing, and export of Halal pharmaceuticals. The other well-known nations with several Halal pharmaceutical manufacturers are Brunei and Indonesia (Zehra & Naqvi, 2017). Already a leading exporter and consumer in the halal industry, Malaysia is working to establish itself as a pioneer in the certification, manufacturing, and distribution of the rapidly growing international halal pharmaceutical market. Approximately, one-third of the world's halal-certified products are pharmaceuticals. According to the Chemical Company of Malaysia, the halal pharmaceutical market is currently worth RM300 billion and is expected to reach RM528 billion globally by 2021. This established the precedent for the growth and development of the local pharmaceutical industry that presently boasts about 2,000 registered medicinal goods (Muhammad Suhaini, 2022). Malaysia has established the Malaysian Standard (MS 2424:2012), the first international standard for the manufacturing and handling of halal pharmaceutical products. The Malaysian Standard (MS 2424:2012) describes the general guidelines in the manufacturing and handling of halal

pharmaceuticals. It serves as a basis requirement for halal pharmaceuticals in Malaysia. The MS 2424:2012 guideline, together with rather obsolete regulations, is not adequate to provide certainty and support for the growth of halal pharmaceuticals production in Malaysia. With the lack of an established and specified legal and administrative framework, many foreseeable risks may diminish the industry (Abdul Aziz, Abdullah, Nasrun, Roslan, and Awang @ Ali, 2022).

Malaysia is a trailblazer in the certified halal pharmaceutical industry for its global halal pharmaceutical standards, with Muslims constituting more than half of its population. It created the world's first halal certification for pharmaceuticals in 2012. Their new halal standard has broadened the scope for halal certifying bodies, allowing them to address the needs in biologics and the search for halal vaccinations. Significantly, Malaysia is recognised to be a member of the Organisation of Islamic Committee (OIC) and the only OIC. As the only nation to be recognised as a member under the Pharmaceutical Inspection Cooperation/Scheme (PIC/s), Malaysia is seen as having the ability to lead the way in halal pharmaceutical manufacture. Malaysia has already established its position in the international pharmaceutical sector by joining the Pharmaceutical Inspection Cooperation/Scheme (Norazmi, & Lim, 2015). The fundamentals for Halal pharmaceutical in Good Manufacturing Practice (GMP) are (1) Quality Management System, (2) Personnel, (3) Premises and Equipment, (4) Documentation, (5) Production, (6) Quality Control, (7) Contract Manufacture and Analysis, (8) Complaint and Product Recall, and (9) Self Inspection.

Malaysian authorities have issued a comprehensive set of guidelines known as the Malaysian Standard of Halal Pharmaceuticals: General Guidelines. This gives pharmaceutical companies the guidelines they need to benefit the general public's health and safety, it also makes it easier for domestic pharmaceutical manufacturers to enter the global halal pharmaceutical market. Halal Pharmaceuticals General Guidelines also provide more ways for customers to choose approved medications that are safe, effective, of high quality, and

hygienic, while also satisfying shariah-compliant requirements. Furthermore, their procedures are in accordance with halal regulatory bodies, giving the halal-conscious consumer peace of mind when purchasing pharmaceutical products. According to Amrahi Buand, President of the Malaysian Pharmaceutical Society, pharmaceutical products must meet the necessary safety, efficacy, quality, and hygiene requirements to be halal-certified (Ali, 2021).

Over the last two years, the Halal pharmaceutical industry has seen several significant advancements. Pharmaceuticals made according to halal standards are becoming more and more well-liked worldwide and are establishing new benchmarks for quality and safety. The first Halal license for Rx (prescription) medicine was issued to the Chemical Company of Malaysia (CCM) by Malaysia's religious authorities, JAKIM. Meanwhile, Indonesia is preparing for mandatory Halal items as they issued Law No.33/2014, in which the law's first article stated that products' that enter, circulate and trade in Indonesia must be halal certified to improve the products' safety standards and strengthen consumer protection (Kasri, Ahsan, Widiatmoko, & Hati, 2021), while the UAE's ESMA will require all Halal imports to be certified (Biospectrum, 2020). Pharmaceuticals have a significant role in lowering mortality rates and preventing the general populace from contracting illnesses, which results in better long-term preservation of sustainable public health.

Halal products are rapidly gaining global recognition as a standard for safety and quality assurance. Although the food sector dominates the Halal industry, pharmaceuticals are the second most important segment. Consumers, particularly Muslims, as well as those of other faiths, accept halal-certified products with confidence. Despite this, the number of young and, educated Muslims is expanding, which has increased their spending power and raised the need for halal pharmaceutical items (Mohezar, Zailani, & Tieman, 2017). Without a doubt, the halal product sector in Malaysia and around the world has been evolving. Recognising the new concept of the halal sector allows producers to develop better policies and technologies for halal

certification in the manufacturing of their products. All good and clean foods are halal, according to the Quran. In non-Arabic-speaking countries, the term is most used in a narrower context of Muslim dietary laws only, especially when meat and poultry are concerned. However, Halal products are now concentrated not only on food but also on all products, including pharmaceuticals, biological products and fertilisers (Biospectrum, 2020).

Duopharma Biotech Berhad, Chemical Company of Malaysia Berhad, Pharmaniaga Bhd, Simpor Pharma Sdn Bhd, EMBIL Pharmaceutical Co., Ltd., Nutramedica Incorporated, Halal Pharma International Ltd, Hovid Bhd, and Bosch Pharmaceuticals (Pvt.) Ltd. are some of the major players in this industry. Companies are expanding their footprints in this market through various strategies such as new product launches, expansions, partnerships, agreements, acquisitions, joint ventures, and others. Companies such as Pharmaniaga and AJ Pharma, for example, are investing heavily in the research and development of Halal vaccines. Furthermore, by completing the formulation and filling facilities built by AJ Pharma Holding Sdn Bhd, a subsidiary of the Saudi-based AJ Vaccines Group, Malaysia is poised to become a hub for halal vaccines (Biospectrum, 2020). It has been more than 20 years since a handful of Malaysian companies started producing medicines that comply with halal standards, but the halal pharmaceuticals sector worldwide is still at nascent stage. The widespread use of halal labelling, as well as significant institutional purchases of halal medications could drive future demand. Additionally, halal-conformity tests in various nations may be harmonised and mutually recognised by certification bodies, which might help suppliers overcome obstacles and encourage the growth of the sector (The Economist, 2020).

2.3. Muslims and Halal Pharmaceutical Products

With Muslims accounting for nearly a quarter of the global population, there is a greater need for halal awareness in the pharmaceutical industry. The largest contributor to the market's significant growth is an increase in the number of Muslims around

the world. Research has determined that 1.8 billion people, or up to 25% of the world's population, identified as Muslims. Additionally, the demand for shariah-compliant items is not yet being met by the supply. In addition, it is predicted that by the year 2030, there will be about 2.2 billion Muslims worldwide (Zehra & Naqvi, 2017). Muslims have recently been more attentive and sensitive about things that adhere to their beliefs. This is due to increased education and awareness about religious commitments, which further contributes to rising global demand for this industry. (Zehra, F., & Naqvi, A. 2017). The purchasing volume of Muslim people is enormous and expected to increase by 36% to 2.2 billion by 2030 (Noorliza, 2020). Many Muslims, rely on modern medicine to treat a variety of ailments. We rely heavily on the pharmaceutical industry, whether it is a quick painkiller to cure a headache or a trip to the doctor when our knees hurt. Without our knowledge, the medication we take may contain non-halal ingredients (or excipients) or be manufactured in a way that is not consistent with Islamic values (Ali, 2021).

Halal pharmaceuticals consist of a harmonisation of shariah or Islamic religious law and Good Manufacturing Practice (GMP) standards with the approved halal material list. Halal medicines are those that strictly adhere to Islamic shariah guidelines. Similarly, Famiza, Samsinar, Kursimah and Firdaus (2017) explained that, Muslims in Malaysia must therefore, due caution checks the ingredient list on the packaging. Some of this information is well beyond what many customers would consider to be common knowledge. In this case, consumers are genuinely in a situation where their information is limited. Halal is frequently associated with avoiding alcohol, pigs, and meat that has not been ritually slaughtered. Halal, on the other hand, is more comprehensive; it emphasises substance purity and recommends consuming goods that are closest to their natural state, whereas the true concept of halal is to ensure that the whole process in preparation of the product has met the shariah rites. This may require people to look for products that are free of GMOs, antibiotics, pesticides, and preservatives. Halal also denotes moral purity, requiring believers to follow ethical standards and perform good deeds. Halal is consequently intimately related to concerns

about fair trade, organic farming, animal welfare, food safety, and ecological economics. Halal, when viewed holistically, is congruent with, and reflects corporate social responsibility (CSR) and environmental values (Bilgin & Nakata, 2016).

A Muslim who has awareness about his or her halal products will not only consider the labels or his or her health but will also be loyal to halal products, since his or her are aware of the prohibition and the consequences of consuming non-halal goods. Religion and spiritual beliefs will have an impact on how people act and behave, which in turn will directly and ultimately affect what they eat (Ernawati, 2019). A medicine is composed of a combination of active ingredients and most products contain high levels of alcohol or questionable animal by-products. In the same context, pharmaceuticals are referred to as medicinal products, dosage forms or drug products. Any substance or preparation used in the treatment or prevention of illness might be considered a pharmaceutical. These are designed to be used for both human or veterinary purposes, and either the importing country's or the country's health laws have jurisdiction over them (Saha, Tushar & Rifat, Tashnuva & Shimanto, Shibbir. 2019). Medicines containing alcohol would be considered Halal if there were no suitable alternatives available. Nevertheless, topical medications that contain alcohol are considered halal if they are used for external application (not for orally) since alcohol can disappear through evaporation. The most significant point is that Islamic law permits the intake of non-halal foods in life-threatening circumstances (The Economist, 2020). The study of drugs is known as pharmacology, it is about the study of way the function of living tissues and organisms is modified by chemical substances. It is also related to the study of the effect of chemical agents on living process.

Halal pharmaceuticals are those that come from sources that are permissible to Muslims, such as plants, animals, organic or inorganic substances, and that are prepared, manufactured, and extracted in accordance with Islamic teachings. Muslim scholars have made it clear that any substance that causes drunkenness or intoxication by alcohol is deemed to be Khamr and is therefore

forbidden (Tushar Saha, Tashnuva Rifat, & Shimanto, S. 2019). Besides halal, Muslims are also encouraged to consume everything that is *tayyib*. In fact, the word *tayyib* is often followed by the word halal in Quran verses. The word *tayyib* means “good”, “delicious” and “lawful”. Typically, it refers to the hygiene and safety of food consumed by Muslims (Raheem and Demirci, 2018). Muslim pharmacists started looking for alternatives to these allegedly illegal and questionable substances. In Malaysia, the initial standard guideline for halal pharmaceuticals, MS2424/2010, was released in February 2011 (Saha, Tushar & Rifat, Tashnuva & Shimanto, Shibbir. 2019).

The halal pharmaceutical industry should project a wider image of Islamic values - good, clean, and wholesome - into the manufacturing process in addition to emphasising the halal values in the production, to appeal to a wider market group. Halal is closely linked with organic agriculture, fair trade, product safety, ethical business practice, human behaviour with animal and ecological economics (Abdul Aziz et al., 2022). Manufacturers should not only be concern about the operations and procedures that satisfy the Sharia law. They must consider implementing the halal pharmaceutical process within a framework of ethical business practices and a sustainable regime of policies (Mohezar, Zailani & Tieman, 2017). This indicates that the manufacturing of Halal pharmaceuticals must adhere to strict international standards, which mandate that procedures employ a team of trained professionals to oversee proper manufacturing, cleanliness, storage, and distribution procedures. As a result, the medication is suitable for human ingestion. In the context of Halal pharmaceuticals, safety refers to a drug’s ability to be swallowed, injected, or applied without endangering humans or causing them to become intoxicated to treat an ailment or promote good health.

The competency of pharmacists as specialists in the field of pharmaceuticals affects the halalness of medicine as well. The community has a lot of hope in the pharmacists’ ability to assure the availability of halal drugs, both those who work in the pharmaceutical industry and those who work in the service sector. For pharmacists who work in the pharmaceutical sector, this

includes choosing and preparing medicinal raw materials; carrying out the production process, ensuring the products are of high quality; and making sure the pharmaceuticals produced adhere to applicable criteria, including their halalness (Rahem, Effendi & Faridah, 2021). Additionally, education is vital; medical practitioners need to be aware of the contents of the medication they prescribe and inform the public accordingly specially to advise patients more effectively and respond to Muslim's patients' requirements more effectively (Salman Ali, 2021). Producing different scientific reference materials that are suitable for doctors, pharmacists, health care providers, and factory workers will be a helpful service to more than one billion Muslim around the world.

Demand from the Muslim population combined with acceptance from non-Muslim consumers who see the value of eating halal products because these products are considered cleaner and healthier could support the financial success and economic development of the nation manufacturing halal products (Norazmi & Lim, 2015). For Muslims, seeking halal goods is a must to get Allah's blessings and staying away from what is haram is also their responsibility. Meanwhile, research by Shah Alam and Mohamed Sayuti (2011) had revealed that non-Muslim consumers buy halal products because they feel safer when they use halal products compared to non-halal products (Sudarsono & Nugrohowati, 2020). In addition to pharmaceuticals, the market for vaccines also offers profitable positions because numerous pharmaceutical companies are working to create vaccinations that adhere to shariah law (Zehra & Naqvi, 2017).

2.4. Issues in Halal Pharmaceutical Products

Halal industry is often associated with many issues and is a global multi-billion-dollar business. There is a general lack of knowledge about the halal status of over-the-counter medications. Most of the products contain high levels of alcohol or questionable animal by-products. In Muslim-majority countries, halal-certified medication is readily available. If the situation allows, the halal-

conscious consumer should look for halal-certified options, scan the ingredients list, or consult a trusted Muslim pharmacist (Ali, 2021). Regrettably, Malaysia does not have a distinct Halal law, and its fragmentary legislations are insufficient to safeguard consumers (Abdul Aziz, Abdullah, S. M., Nasrun, Roslan and Awang @ Ali, 2022).

There is still a lot of work to be done within the existing pharmaceutical industry to raise consistent awareness about 'halal.' As a result, a process like halal certificate is necessary to certify that a product is permissible, including halal pharmaceutical products. Halal certifying bodies must ensure that the halal pharmaceutical market follows a well-regulated and harmonized halal accreditation procedure for it to grow. Furthermore, education is essential; medical practitioners must understand the contents of the medications they prescribe and inform the public accordingly (Ali, 2021). With increased awareness of halal pharmaceuticals, countries such as Australia, the United States, and Singapore have begun to invest in halal pharmacies. Pharmaceutical companies must focus on product innovation.

However, Malaysian halal pharmaceutical sector lacks a sufficient legislative and administrative structure. This is one of the issue that made the halal pharmaceutical sector difficult. The Malaysian halal pharmaceutical business is not yet governed by any codified laws. Currently, the Trade Description Act 2011 and Trade Description (Certification and Marking of Halal) Order 2011 - which oversee both the halal food industry and halal pharmaceuticals - are the same laws that govern both sectors. Lack of a well-defined legal and administrative framework could cause many predictable hazards to materialise and harm the industry (Norazmi & Lim, 2015). In Malaysia, JAKIM is the only organisation that produces the Halal mark (present practise), but JAKIM also approves several certifying organisations from other nations. The way certification is currently done in other nations differs from the way JAKIM does it. The alarming disclosure of several raids that revealed the abuse of this delegated authority has recently outraged Malaysian society. This necessitates a review of

the administrative rules and tools used for enforcement that now control the halal supply chain. Nevertheless, there are only a few pharmaceutical products in the market with the certified halal logo (Famiza, Samsinar, Kursimah & Firdaus, 2017).

In Indonesia, the construction was motivated by the halal certification standard carried out by the Institute for the Study of Food, Drugs, and Cosmetics of the Indonesia Ulema Council (LPPOM MUI), however, this step did not support the legislators, so that the already well-established halal system was not implemented properly. This is evident from the extremely small number of pharmaceutical products that carry labels denoting halal certification (Luthviati & Jenvitchuwong, 2021). This makes the halal status of certain products unknown. The absence of detailed information about additional ingredients in the drug brochure is one of the factors that causes the halal drug status to be unknown (Rahem, Effendi & Faridah, 2021). Different product knowledge levels had an impact on how halal items were perceived, which will also influence the various levels of awareness of halal products (Ernawati, 2019).

Logistics of pharmaceuticals products also plays a crucial role in protecting the integrity of sharia-compliant in terms of transportation, storage, warehousing, and handling process (Ramli, Amin, Zawawi, & Aziz, 2018). On this point, Abdul Aziz et al (2022) highlighted the need to avoid combining halal and non-halal foods and products within one manufacturing premise. On a similar note, Norazmi 34, 35, and Lim (2015) explained that the pharmacy's halal status ensures that the product does not contain non-halal ingredients and that every step of pharmaceutical preparation fully complies with Islamic requirements, from the source of strains of microorganisms to the media used for culturing, the containers and membranes used in the production process, the steps involved in the filing and finishing processes and the packaging and transportation to the consumer. In Malaysia, Penang Port and Port Klang have been certified as sharia-compliant ports for exporting halal pharmaceutical products (Mahidin, Saifudin, & Othman, 2016). As a result, a proper supply chain that incorporates the

participation and support of halal logistics providers will help to ensure its integrity (Ngah, Thurasamy, Aziz, Ali & Khan, 2019).

In the study of Husin, Kamarudin, and Rizal (2021) regarding pharmaceutical logistics in Malaysia, most respondents highlighted that Malaysian companies possess well-established equipment and facilities that are sharia-compliant. However, the major concern, as emphasised by them, is more on a limited number of skilled workforces, lack of industrial collaboration, and lack of distribution channel that hinder the industry's business growth. Despite an increase in manufactures, only a small percentage of them use halal warehousing services. Even most halal-certified manufacturers are still unwilling to adopt halal warehousing services in their business operation. The expense of providing specific facilities, including rooms, tools, and personnel, will rise significantly, pushing up prescription prices and limiting access to the supplies that people need for health care (Luthviati & Jenvitchuwong, 2021). Networks for the supply of pharmaceutical products become less reliable, more vulnerable, and riskier because of pharmaceutical supply chains. This reality has created a more challenging and competitive business environment, which has prompted pharmaceutical businesses to look for operational status that enhances their capabilities.

Furthermore, the public is becoming increasingly concerned about the origins of their pharmaceutical products. In such circumstances, the incidence of children contracting contagious diseases has been noted to be on the rise in Malaysia, particularly in the recent years. As a result, health officials are concerned that some parents will refuse immunisation programs for their children, out of fear that the vaccines used will violate some strict religious rules. A conservative Muslim may sometimes refuse the immunisation due to concerns that some vaccines were derived from pig or porcine contents, in which Muslims are not permitted to consume (Latiff & Zakaria, 2021). Grabenstein (2013) revealed that polio vaccines were refused in Kano city (in Nigeria's Northwest region) due to the false idea that these vaccines were contaminated with the Human Immunodeficiency Virus (HIV).

Alqudsi (2014) asserted that the lack of knowledge about the significance of halal products inevitably lowers demand.

Pharmaceuticals do, however, have several features that halal-conscious customers might find objectionable. According to James Noh, president of Korea Institute of Halal Industry (KIHI), a halal product promotion organisation that works with South Korean producers, some medicines and vaccines contain animal material, including as cell lines (such as *E. coli*, yeast, and animal cells), recombinant genes, as well as ingredients derived from animals or alcohol. Increased ethical purchasing power for halal medications may result from greater public knowledge of these factors. (The Economist, 2020).

The implementation of the halal certification for vaccine products in Malaysia may have been triggered using non-halal or forbidden ingredients in the manufacturing of those vaccine products. The only standard to date is the Malaysia Standard of the MS 2424, and it only serves as a broad reference. A more comprehensive manual that drugs can follow needs to be created. The Halal Certification Body, like JAKIM, is now in uncertainty as a result of Malaysia's requirement that vaccination goods be certified as halal (Latiff, Zakaria & Man, 2021). The readiness of the halal certification body is a challenge in implementing halal certification to vaccines. Although JAKIM has long been implementing halal certifications, the process for vaccines has been difficult because halal certification for vaccine products necessitates more in-depth knowledge. This implies that a higher level of technical expertise is required (Latiff, 2018).

2.5. Way Forward

Regarding the highlighted issues, government initiatives and a favourable business environment have been pointed to as the industry's opportunities to improve the halal pharmaceutical sector (Husin, Kamarudin, & Rizal, 2021). Moreover, to ensure JAKIM's readiness to produce halal certifications, it must collaborate with other agencies and industries, particularly the

National Pharmaceutical Regulatory Agency (NPRA) and the Malaysian Ministry of Health, to implement halal certification for vaccine products (Latiff, 2018). To ensure that pharmaceutical producers employ halal active and inactive ingredients for their pharmaceutical products, the government, particularly the Ministry of Health, should act along with JAKIM. "Halal certification" applications must be submitted before using any chemical substances for medication, and should follow Islamic principles and quality control. The halal label itself will increase consumers' confidence, broaden the reach of the global halal food market, and improve the marketability of products in the market (Rahem, Effendi, & Faridah, 2021). Halal certification is crucial in determining what is qualified as halal and what does not, which may be a very difficult process of verifications beginning with the raw material and ending with the launch of the good or service (Alserhan, Bayirli & Zakzouk, 2020). Subsequently, the readiness of manufacturers or industries is an important factor in implementing halal certification of vaccine products. When implementing the use of halal vaccines, the pharmaceutical industry must prepare the technical details and considerations following pharmaceutical standards of Good Manufacturing Practices (GMPs) (Peng et al., 2013). Mohamed Azmin said "There is an Islamic tradition that encourages the search for knowledge through great efforts in research and development in Halal medicine and pharmaceuticals, particularly in the field of vaccines" in his opening remarks during the virtual launch of the 17th Malaysia International Halal Showcase (MIHAS 2021).

Halal authorities must learn from the failures of more mature halal industries (like food) and harmonise regulation as it develops, because the halal pharmaceutical industry is still in its infancy. These actions are in progress. The International Halal Accrediting Forum was established in Dubai to standardise halal accreditation procedures among its members and foster international agreement among authorities. While this endeavour is now on pause owing to COVID-19, pharmaceutical corporations, and the national standard-setting agencies of OIC member nations are involved in the establishment of standards. According to Ms. Ghazalli of Duopharma, "We are looking

forward to this worldwide standard so there is clarity and uniformity on how we understand halal pharma” (The Economist, 2020). Mohamed Azmin (MIHAS 2021) pointed out there is an urgent need for the standardisation of the certification requirements if Malaysia is to attain homogenous global market access.

After that, factory facilities must be dedicated to the halal concept to ensure that the ingredients used are halal. Additionally, the pharmaceutical industry must adhere to all the standards and requirements set forth by the halal certification bodies and respective authorities (Latiff, 2018). In fact, any change, no matter how minor, is extremely difficult for vaccine manufacturers or the pharmaceutical industry to implement. To ensure the integrity of the products and raw materials in the supply chain that connects the various suppliers to the final customer, strict criteria must be applied; this process calls for Halal logistics.

In response to this development, the Malaysian government created the Halal Business Master Plan 2023 to comprehensively catalyse the nation’s Halal industry, which will have an impact on the halal pharmaceutical industry. A strong legal and administrative structure is needed to effectively regulate the industry’s anticipated rapid growth (Abdul Aziz et al., 2022). Malaysian new halal standard has expanded the scope for halal certifying bodies to address the demands in biologics and the search for halal vaccinations (Salman Ali, 2021). Karina Imran stated that Duopharma Biotech’s products are 98% halal-certified, apart from products undergoing re-registration or newly introduced products awaiting certification (Bernama, 2022). Companies can improve their CSR profiles and programmes by adhering to the halal principle of good deeds, which is based on the ideals of openness, justice, and community. Second, businesses can avoid having their brand associated with Muslims only, by promoting halal as a health and wellness effort. Through these two initiatives, the market for halal goods is expanded to non-Muslims (Bilgin & Nakata, 2016).

A framework is provided by the Halal Development Corporation (HDC), a company registered under the Ministry of Finance, to support the halal economy in several important industries, such as pharmaceuticals and medical equipment. Targeted finance and tax incentives are two important assistance initiatives. Halal business parks, for example, provide local ecosystems to assist business growth in coordinated environments that profit from the unique infrastructure and proximity to other halal producers. In 2019, improvements to cover vaccination products were made by leveraging the already existing halal certification procedures. The largest pharmaceutical company in the nation, Pharmaniaga Berhad, was given the exclusive rights to locally "fill and finish" the Sinovac product that was originally from China, which marked the official start of this goal's realisation last year. This item turned out to be a pillar for the regional vaccination effort (Muhammad Suhaini, 2022).

Undoubtedly, the market for halal products has been developing both in Malaysia and globally. The ability to create improved regulations and technology for halal certifications in the production of their products is provided by producers' recognition of the emerging halal sector. Companies are expanding their footprints in this market by utilising a variety of techniques, including new product launches, product expansions, collaborations, agreements, acquisitions, joint ventures, and others. For instance, organisations like Pharmaniaga and AJ Pharma are making large investments in the study and creation of Halal vaccinations. A centre for halal vaccines is also expected to emerge in Malaysia with the completion of the formulation and packing facilities constructed by AJ Pharma Holding Sdn Bhd, a Saudi Arabia-based subsidiary of AJ Vaccines Group (Adroit Market Research, 2019). Research and development for vaccines with a local origin are being sped up through the National Vaccine Development Roadmap (PPVN), and the recently established Malaysia Genome and Vaccine Institute. Malaysia would have direct access to technology, and be able to transmit and grow the knowledge of local researchers thanks to the bilateral investor's agreement with the Coalition for Epidemic Preparedness Innovation (CEPI). It is projected that the first COVID-19 vaccine

of Malaysian origin would be released by 2024. Nine businesses have been accepted for manufacturing licences or incentives (Muhammad Suhaini, 2022).

This is a crucial step towards reaching vaccine independence. Given the current global demand for potent vaccinations, it will serve as a major catalyst for the halal pharmaceutical industry's expansion.

2.6. Conclusion

As more Muslims become concerned of the origins of their medications, the demand for halal pharmaceuticals arises. This presents an opportunity for the pharmaceutical industries to produce halal pharmaceutical products and position themselves to become more competitive in penetrating the global *halal* market. The pharmaceutical companies will provide an additional layer of assurance for the halal-conscious consumers. Not only that, they will also ensure the global populations' health and safety with a dependable and globally accredited halal certification system for pharmaceutical products.

To implement halal certifications for vaccine products in Malaysia, a Muslim country, some obstacles, and challenges must be overcome, either by JAKIM, other halal certification bodies, and agencies, or even by the pharmaceutical industry itself. Vaccines or vaccine products must be derived from halal sources, which can be either plants or animals. It is quite difficult to persuade and educate the manufacturers and society that halal goods, such as food and medicines, are not just for Muslims. Since they are made in accordance with Islamic guidelines, as well as other internationally recognised criteria, halal foods and medications are exceptionally clean, safe, and high-quality items for all consumers. With a dependable and globally accredited halal certification system for pharmaceutical products, pharmaceutical companies will not only provide an added layer of assurance for the halal-conscious consumer but will also ensure the health and safety of the global population.

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