

# UNDERSTANDING THE DIGITALIZATION OF THE BLUE ECONOMY IN A GLOBAL HALAL-HUB

Arna Asna Annisa\*<sup>1</sup>, Fany Indriyani<sup>2</sup>

<sup>1</sup>Universitas Gadjah Mada, Yogyakarta, Indonesia/ UIN Salatiga, Jawa Tengah, Indonesia

<sup>2</sup>Flinders University, Australia/ UIN Salatiga, Jawa Tengah, Indonesia

Corresponding Email: \*<sup>1</sup>arnaasnaannisa@mail.ugm.ac.id

## Abstract

*Maritime transportation is a driving force for global trade and is one of the fundamental activities of the blue economy. On the other hand, digital technology is recognized as a breakthrough in upgrading progress in various aspects. This conceptual paper aims to synthesize the role of digital technology in developing the halal industry through the use of the blue economy in the form of a global halal hub policy in Indonesia, which is known as an archipelagic country. This research was carried out with a structured and systematic descriptive approach to Scopus articles obtained using the string: "blue economy" AND digitalization\* OR "halal industry" OR "halal hub". Through the Prisma method filter, an in-depth study of 7 Scopus articles shows that supply chain traceability in the halal industry requires a guaranteed guarantee of halal products from upstream to the hands of consumers. Facing high global halal growth, it is necessary to synergize the role of logistics, both land, sea and air, with information technology and economic digitalization systems. The digitalization of shipping makes the maritime industry more environmentally friendly and efficient. This will result in significant cost savings and increase ship efficiency, supply chain transparency and open market access. In the global halal hub, supply chain transparency is a manifestation of commitment to guaranteed halal value in the logistics route for halal products. Furthermore, by guaranteeing a halal supply chain that is controlled through this information technology system, open information between agents will emerge and can automatically accelerate domestic and international market growth. The concept of synergistic digitalization of the blue economy in the development of the global halal industry, which is new in this research, can be used as a reference for the development of halal logistics science and policy.*

**Keywords:** *Blue Economy, Halal Hub, Halal Industry, Digital Economy, Sustainability*

## INTRODUCTION

The blue economy concept refers to the sustainable use of marine resources to improve the economy, improve people's lives and the health of marine ecosystems. The blue economy includes several sectors, namely fisheries, aquaculture, shipping, energy, tourism and marine biotechnology. The blue economy has the potential to reduce poverty rates and contribute to sustainable development which is currently the focus of various parties such as policy makers, academics and various stakeholders (Sambodo et al., 2023).

The emergence of the blue economy concept in the early 2000s gained recognition as one of the main factors driving the achievement of SDG 14 which focuses on the conservation and sustainable use of oceans, seas and marine resources. In Indonesia, which is known as an archipelagic country, the development of the blue economy aims to be a source of sustainable and inclusive growth for Indonesia (Suryandari, 2024). Indonesia's inclusive economic development is carried out primarily through international trade which contributes to creating logistics stability, supply chains and commodity availability at the global level, including through improving the logistics ecosystem and industrial digitalization. It was recorded that Indonesia's GDP increased by up to 0.94% due to this policy (Kemenko Perekonomian, 2024).

The positive trend in Indonesia's economic growth is supported by the development of Halal Industrial Zones which also create a halal ecosystem in the supply chain. By playing a role as an international commodity link, the Indonesian halal product supply chain can be encouraged through strengthening the Global Halal Hub (GHH) in the form of an area that functions as a center for Islamic

economic activity involving various financial and commercial service activities such as the provision of halal commodities, company warehouse management, education and research, consulting services, and other services (Istiqlal, 2023). GHH will function to improve Indonesia's ability to meet halal standards and develop a safety approach that ensures that halal products issued meet global standards.

The Global Halal Hub, which is expected to boost the domestic halal market as well as the international market, will not be separated from the liaison functions played by the maritime sector. Through the blue economy concept, GHH can be accelerated as a solution to maintain nature's carrying capacity for the economy. The blue economy is an idea for managing the ocean sustainably (Qi, 2022). The main goal is to develop the economic sector. This is in line with the goals of the global halal hub which focuses on high, massive productivity and sustainable resource optimization by upholding the application of halal principles in every sector.

However, the positive spirit of integration of the blue economy and GHH still has obstacles. Lombok, as one of the regions used as a development project for Indonesia's halal industry, has not been able to use the potential of blue economic wealth as a source of community development (UNAIR, 2024). The same thing was also expressed by Istiqlal (2023) who revealed various untapped potentials of GHH in Indonesia.

The maritime sector has great potential for the national economy. The supply chain for a product can start from optimizing the economic potential of the marine sector. The existence of a supply chain from upstream to downstream that provides halal guarantees for a product will produce high quality products so that it will contribute to economic growth. Coupled with the application of digital technology, supply chain performance will increase, making it more integrated and at the same time increasing company performance, thereby creating new value and new revenue potential (Istiqlal, 2023).

The role of technology is recognized as a sector that is sufficient to help society survive amidst limited space and movement (Bettiol et al., 2022; Hahm et al., 2022). Technology is changing individual lifestyles, even industries, including the halal industry which can be relied on to support the national economy during the pandemic (Dinar Standard, 2021, 2022). This condition is greatly influenced by digital transformation. It is noted that the digital economy market itself globally reached USD 1.9 trillion or around IDR 27,550 trillion in 2014 and is estimated to grow 15 percent in the following year. This value is calculated from e-commerce transactions and digital advertising spending. Muslims are the world's strategic consumers. The transaction value was USD 107 billion (Rp. 1,522 trillion) in 2014 and is projected to grow 17 percent CAGR to USD 277 billion or Rp. 4,016 trillion in 2020. This community represents almost a quarter of the world's population and 5.8 percent of the global digital economy in 2014 (Thomson Reuters, 2015).

Collaboration with world industry players and integrating halal supply chains is one of the priorities for developing Indonesia's halal industry (KNKS, 2020). This is stated in the Global Halal Hub strategy issued by KNKS. Through GHH, it is hoped that Indonesia will be able to form an integrated ecosystem that will optimize its potential to become a halal product producer and strengthen its role as a global business actor. GHH's goal is to facilitate the downstreaming of export-oriented halal products in the country, such as agricultural, plantation and marine products.

Based on the background above, the limitations of the problem in this research are as follows: (1) the role of digitalization of the blue economy in the halal supply chain, (2) the role of digitalization of the blue economy in halal tourism, (3) the role of digitalization of the blue economy in the halal industry in general. This is expected to have an impact on the growth of the domestic halal industry as well as global halal trade involving the role of Indonesia.

## LITERATURE REVIEW

The Blue Economy is a relatively new concept that refers to economic development using natural cycles, especially marine. According to the publication conducted by Vaca Cabrero et al. (2024), currently the blue economy is a much broader concept, transversal in nature and closely related to the maritime economic sector, from maritime transportation to offshore renewable energy through port operations. From the results of research conducted in Spain, Vaca explained that the degree of

implementation of the blue economy dimension showed significant development in the average port in 28 Spanish port authorities. The next recommendation in this research is how digitalization can improve the performance of the blue economy in developing countries. Bearing in mind that quite a few developing countries have great maritime potential.

On the other hand, Ha et al. (2024) investigate the relationship between the effectiveness of marine biological resources and economic complexity, with a focus on the sustainable promotion of the blue economy in European countries. This research shows the level of economic complexity in the implementation of the blue economy from 2009-2020. However, this influence is more pronounced in the long term, and in particular, the influence of digitalization on various aspects of marine biological assets shows significance over this long period. Similar results were also shown from research by Shan et al. (2023), where investment in digitalization of the blue economy will reduce banking risk for blue companies.

Meanwhile, research by Hashom et al. (2023) regarding the Halal Logistics Performance Index (HLPI) framework and research by Jaswir et al., (2023) shows that Malaysia, which still has advantages as a halal-hub, is a reference for developing a halal logistics performance index. This is because Malaysia realizes the urgency of becoming a halal-hub at the global level and is aggressively trying to become a key player in providing halal food products. On the other hand, Muttaqin et al. (2023) emphasizes Indonesia's opportunities and potential as a regional and global halal hub. This effort is carried out through strengthening the halal value chain as one of the strategies to encourage Indonesia to become a global halal hub player.

### 1. Halal Industry

The halal industry is a group of companies that carry out productive economic activities by processing raw materials, both goods and services whose input, processes and output are guided by Islamic law. Halal has now become a universal excellent indicator as a guarantee of product quality and living standards (Gillani et al., 2017).

As time progresses, the global halal market has developed into a growing sector of the world economy and has become a concern in both developed and developing countries. The halal industry answers the needs of the world community, especially Muslims, in meeting their needs.

The halal industry has become an important business during the pandemic, because the halal industry, especially food and beverages, pharmaceuticals and cosmetics, is a backbone that still has quite high activity in pandemic conditions. The pandemic has made people care more about what they use and consume. Halal products themselves are guaranteed to be clean and hygienic. Thus, products labeled halal are guaranteed to be safe for use or consumption during the pandemic.

Seeing the potential of Indonesia with its Muslim majority and ownership of extraordinary natural resources, policies were formulated that could support Indonesia as the center of the global halal industry in 2024, including yaitu:

a. Global Hub

Creating Indonesia as an international hub for world trade and production of halal products.

b. Research & Regulation

Strengthening policy regulations for developing the sharia economy & halal industry, developing research on non-halal substitute materials, and increasing halal awareness among the public. This policy is also aimed at strengthening halal fatwas and halal standards.

c. Industrialization

Increasing technology adoption, improving the quality of superior human resources, developing halal industrial areas, optimizing the green and blue economy, and increasing production efficiency to increase the quality, quantity, and continuity of products and services.

- d. Social Preference  
Increasing halal preferences with a social and social engineering approach through the halal lifestyle development program.
- e. SMEs  
Creating superior quality MSMEs that can produce international standard halal products and business continuity with sharia finance through economic digitalization, sharia financing, and business development (KNKS, 2020).

## 2. Global Halal-Hub (GHH)

The global halal hub is a synergistic ecosystem to accelerate the development of superior local halal-oriented products towards the global market. This strong synergism was built to make Indonesia the world's largest exporter of halal products (Istiqlal, 2023).

Global halal hub as one of the national strategies for developing Indonesia's halal industry aims to create Indonesia as an international halal hub in the production and trade of world halal products. This strategy provides direction in optimizing the potential advantages of halal hubs in each region (comparative advantage) so that Indonesia becomes a major player in the global halal industry. The global halal hub strategy can contribute to economic growth and increase foreign investment (KNKS, 2020).

Development of an international halal center by strengthening cross-sectoral synergy and collaboration between local business actors and global entrepreneurs to invest in supporting the development of the halal value chain industry (starting from raw materials, production, distribution and promotion). This strategy is needed to answer the challenges of supply chain integration which is still running independently. Supply chain integration will facilitate the process of halal product traceability and logistics efficiency, so that Indonesia can become a model in implementing the "Global Halal Traceability System".

The global halal hub development strategy is to strengthen halal standards and Indonesian halal certification that can be accepted and become a reference for halal certification throughout the world. For this reason, initiatives are needed that support the implementation of this strategy. The following are strategic initiatives that need to be carried out:

- a. Collaboration with world industry players.
- b. Government policy in creating an increasingly conducive investment climate.
- c. Halal supply chain integration.
- d. Halal Certification.
- e. National and global traceability systems (KNKS, 2020).

The goal to be achieved through halal supply chain integration is to maximize the value of halal products produced by the halal industry ecosystem as a whole. This is done through regulating the management of halal industrial areas and developing halal logistics related to halal warehousing, transportation and ports, as well as other logistics supply chains. Supply chain integration is a prerequisite for achieving halal integrity and traceability to ensure halal products and services.

Halal supply chain integration is synonymous with halal logistics, which refers to the process of managing logistics operations such as fleet management, storage/warehousing, and material handling in accordance with sharia law principles in ensuring the integrity of halal products at the point of consumption (Aziz & Zailani, 2016).

## 3. Blue Economy

The blue economy system refers to a complex system of sustainable development that involves a series of integrative activities of various parties that directly or indirectly develop and provide key services in the form of marine resources (Farajpour et al., 2022; Qi, 2022). The concept of the blue economy emerged in the early 2000s when sustainable development began to gain

global attention. The term blue economy was first coined by Gunter Pauli, an entrepreneur and sustainability advocate from Belgium (Pauli, 2010).

In his book, (Pauli, 2010) introduces the concept of a new type of economy based on the efficient and sustainable use of marine resources. He argues that the ocean is an untapped source of wealth and can solve many of the world's environmental and economic problems, such as climate change, energy scarcity and poverty. Pauli proposes new business models that mimic the function of natural systems and create value from waste and by-products. He highlighted the potential of the aquaculture, renewable energy and biotechnology sectors to drive economic growth while encouraging environmental sustainability and social inclusion.

Indonesia as a maritime country has great potential in optimizing the Blue Economy. Blue Economy Development aims to be a source of sustainable and inclusive growth for Indonesia. This relies on balancing the social, economic and environmental pillars of sustainable development, and translating the achievement of these three pillars into three main targets, namely: Maritime sector GDP contribution, maritime employment, and the percentage of Indonesia's marine environment designated as "Kawasan Konservasi Perairan" (Suryandari, 2024).

In terms of policy in Indonesia, the blue economy concept is applied to develop the economy from marine tourism, sea transportation, fisheries, as well as marine conservation (Pane et al., 2021). These four things are closely related to the Indonesian halal industry, starting from the potential for halal tourism, halal supply chains, as well as certification of marine products as both consumer products and raw materials.

Marine tourism destinations are favorites for domestic and foreign tourists. In general, this is proven by Indonesia's halal tourism ranking which continues to increase from position 4 to position 2 (Dinar Standard, 2022). In order to remain in harmony with this economic concept, halal tourism needs to be developed with the concept of sustainable tourism.

Furthermore, sea transportation also opens up business avenues in the maritime sector. Sea transportation is still very much needed for the distribution of goods and passenger transportation. This is the main connecting key that connects tens of thousands of islands in Indonesia. Apart from that, sea transportation is also closely related to the supply chain and logistics industry (Tran et al., 2011). Ports as the face of maritime transportation must implement internal and external quality management practices in order to achieve supply chain efficiency, remembering that ports are a link that integrates various parties with business interests (Tran et al., 2011). The supply chain quality management process carried out by this port needs to be developed within a sustainable business framework that is in accordance with the blue economy concept.

The halal industry, which has specificities in its industrial activities, really needs the support of the halal logistics industry so that it can guarantee a halal supply chain to the end consumer. As part of Indonesia's goal to become a global halal production center, the existence of sea transportation which is a successful node for international trade is very important for the national halal industry.

#### 4. Digital Economy

The digital economy includes economic activities that use internet networks and platforms as infrastructure that cannot be separated from society. The 2018 ASEAN Investment Report defines the digital economy as the application of technology using the internet in the production and trade of goods and services. Meanwhile, the IMF in its publication entitled "Measuring Digital Economy" concluded that digital economy terminology is often used to indicate that digitalization has spread to all economic sectors, from agriculture to warehousing. Another definition states that the word indicates a part of the national economy that is based on digital technology with a business model based on digital goods or services. More broadly, new

economic activities such as the collaborative economy, gig economy and sharing economy can be categorized as the digital economy (KPPN/BAPPENAS, 2018).

The definition of the digital economy can also be seen from various aspects, such as: human resources and technology, business processes and business structure. Several annual reports on the global digital economy prioritize fintech and e-commerce platforms as supporting infrastructure across industries involved in digital transactions (Li & Zhang, 2022).

The digital economy cannot be separated from other economic sectors because its applications can be applied in various industrial sectors ranging from finance, transportation, logistics, education, health, agriculture, and so on. Even cross-sectoral.

In relation to the Islamic digital economy, currently there is no globally agreed definition. Thomson Reuters and Dinar Standard calculate the digital Islamic economy based on e-commerce transactions and digital advertising spending by Muslims. However, in general, the digital Islamic economy can be explained as part of the Islamic economy that supports the halal industry through digital platforms which can both increase sales and production efficiency which will ultimately improve company performance (Thomson Reuters, 2015).

## RESEARCH METHOD

The preparation of the conceptual paper in this manuscript was carried out using a systematic descriptive method. With this approach, researchers will present a complete picture of the research focus that has been determined (Suhardianto et al., 2017). By searching and compiling reference sources dominated by Scopus indexed articles in depth, this study opens up space for further discussion considering that not many themes have been raised regarding the urgency of developing a blue economy in Indonesia.

The keyword string determined by researchers to find relevant articles in the Scopus article search engine is "blue economy" AND digitalization\* OR "halal industry" OR "halal hub". A total of 15 articles were obtained which were then filtered using the Prisma method to obtain truly relevant articles through the following considerations:

1. Articles are included in the Q1-Q4 tier
2. Articles use English
3. The publication is in the form of a journal, not a proceeding and not a book chapter
4. Publication is the final article

Based on the provisions above, the final articles that are suitable for analysis are 7 articles obtained from publications in 2023-2024.

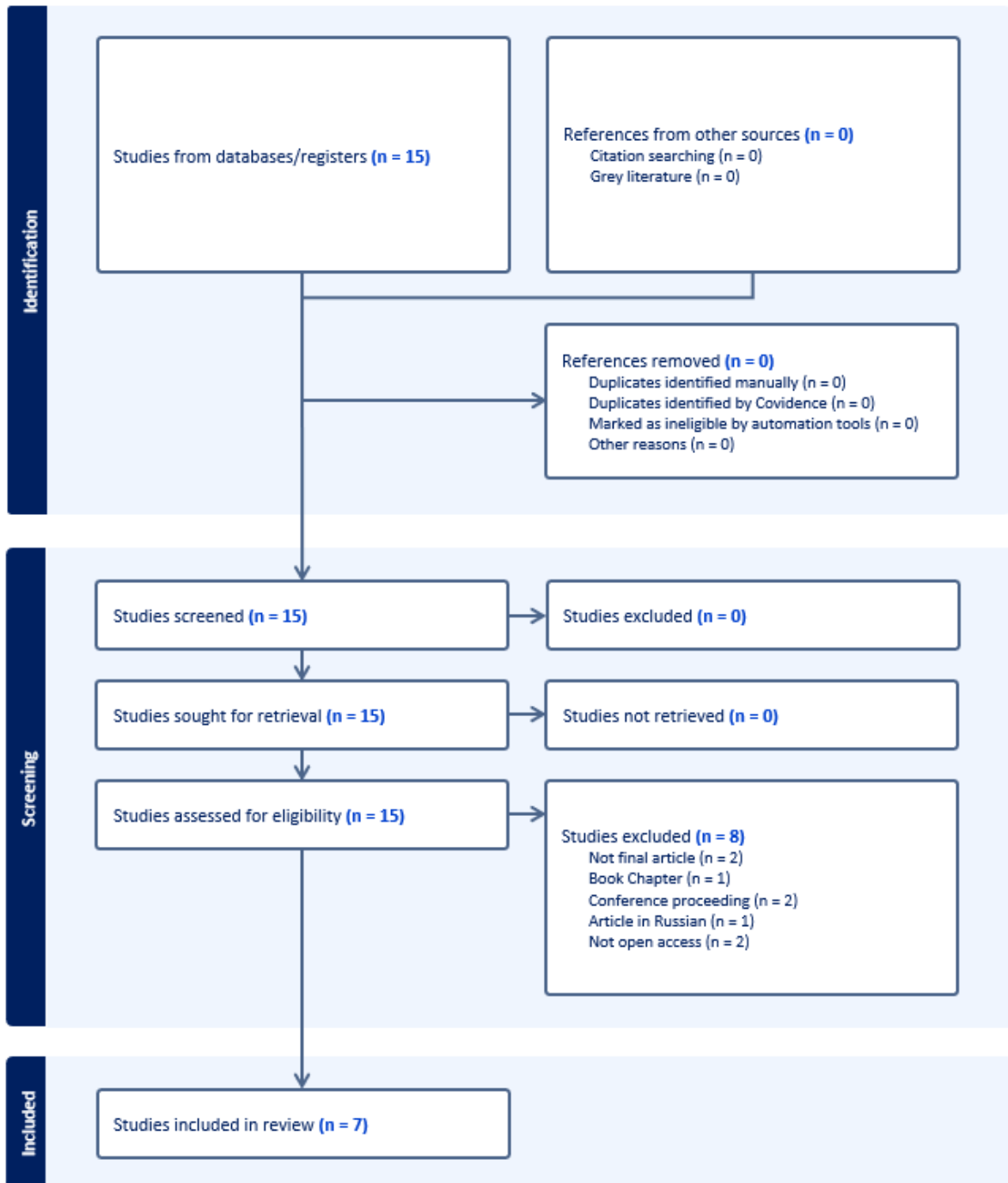


Figure 1. Prism Method

Based on the 7 articles used as references for analysis in this research, the following is the distribution of the articles:

Table 1. Articles Distribution

Author	Tier	Research Method	Context Area	Country Setting
L. T. Ha (2024)	Q1	Quantitative	Examining how digital transformation in the public and private sectors impacts the performance of marine biological resources to demonstrate its importance in driving a sustainable blue economy.	Europe
Vaca Cabrero et al. (2024)	Q2	Qualitative	Create a database to determine the state of development of blue economy dimensions in each port.	Spanish
Pavlinović et al. (2023)	Q2	Qualitative	Provides insight into the digitalization of shipping (the level of digitalization in ports and maritime transport) and highlights its importance in the future, as well as demonstrating its contribution to achieving sustainable development goals.	Croatia
Hong Nham et al. (2023)	Q1	Quantitative	The target of this research is to determine experimentally the influence of the digital revolution, both for public and private industry, on the sustainable development of marine mineral resources.	Europe
Pace et al. (2023)	Q1	Mix method	Explores the role of foresight in creating alternatives and options for a sustainable blue economy towards 2030 and in building interdisciplinary dialogue on research and innovation opportunities to achieve a sustainable blue economy	Europe
Muttaqin et al. (2023)	Q3	Quantitative	Examining the relationship between key factors that influence readiness towards halal logistics in the food and beverage industry in Indonesia.	Indonesia
Mansor et al. (2023)	Q3	Quantitative	Examining level of Islamic attributes practices by the (Muslim-friendly hotels) MFH in Malaysia.	Malaysia

The research in this article is then described by analyzing various related articles to form a comprehensive conceptual paper with the themes raised. As an illustration, the following is the writing flow carried out by the author in this research:



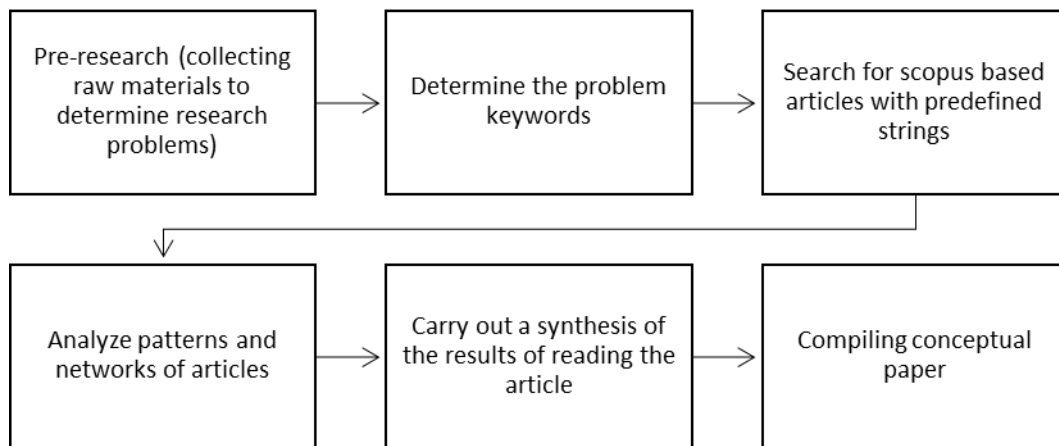


Figure 2. Research Plan

## RESULT AND DISCUSSION

### 1. Global Halal-Hub and Halal Supply Chain

The presence of a port can provide benefits to society when paying attention to the following 5 blue economy principles: 1) Economies of scale; 2) Integrated supply chain management; 3) Innovative technology in every link of the business system chain; 4) Inclusive by involving local communities; 5) Environmentally friendly (Pauli, 2010).

In the context of halal industry development, ports have an important role as one of the success factors for the global halal hub program. Halal-hubs are nodes of collaborative activities in terms of management, production, certification and consultation carried out by countries that have an interest in the development and marketing of halal products (Mansor et al., 2023; Muttaqin et al., 2023).

In its implementation, halal hub focuses on aspects of regulations and institutions that have authority over the handling and development of halal products. Halal hubs are held with the role and approval of various Islamic organizations or bodies in the countries concerned, halal product producers, traders, buyers and other parties who globally agree on halal aspects as the basis for their implementation. The main aim of this halal hub is to provide a credible platform that is able to bridge the global halal product supply chain. The existence of this global halal hub will make it easier for foreign buyers to find superior products assisted by superior human resources who have international standard competencies (Muttaqin et al., 2023).

The construction of this halal hub port facility can not only be seen as a business strategy to face the halal market, which has a very large market both domestically and abroad, it can also be seen from another perspective, namely inspiring people to have a halal lifestyle so that they care more about halal food products, considering that there is a guarantee of a halal supply chain for the products consumed.

Indonesia's halal hub port will be able to accommodate the transshipment of imported goods from Australia which usually go via Malaysia via Northport. The advantage of the halal hub port itself is that exporters of Indonesian halal products can use this facility to send their goods easily to the Middle East. Apart from that, in terms of the flow and volume of goods at the port it becomes more certain and guaranteed because there is certainty of halal standardization. So far, Northport Malaysia has managed many products from China, Thailand and Myanmar which

enter the halal hub port to be certified halal, repacked and sent back to the Middle East (Sambodo et al., 2023).

The supply chain that provides halal guarantees in the halal hub process is closely related to the logistics industry. In general, logistics is a part of the supply chain that is related to the process of sending and storing goods from the start point to the end point along the supply chain, namely from suppliers, producers, distributors, retailers, to consumers. The logistics process involves a number of logistics service providers, such as land and sea transportation service providers, warehousing, and others (Pace et al., 2023).

Halal logistics itself aims to guarantee the halalness of products throughout the flow in the supply chain. Halal logistics is developing due to the increasingly high level of consumer awareness, not only regarding the halalness of products, but also the halalness of the logistics process or supply chain (Khan et al., 2023).

Implementing a halal supply chain requires longer coordination and collaboration than halal products. The halal supply chain must be understood by the actors in the supply chain, both as producers, distributors, warehousing providers, transportation service providers and retailers. Lagging behind in understanding and implementing halal supply chains has the potential to weaken competitiveness. The Fish Quarantine, Quality Control and Safety of Fishery Products Agency (BKIPM) KKP noted that the percentage of Indonesian fish exports to the Middle East in 2017 was actually relatively small. The amount is only 1.97% of the total or equivalent to USD94.16 million of last year's total exports of USD4.78 billion. However, the Middle Eastern halal fish market, which has been dominated by Thailand, can be targeted as a target for expanding the market for Indonesian fishery products by certifying fishery and marine products. Of course, this will greatly benefit domestic fishermen to be able to accelerate their catch on an export basis (KKP/Kementerian Kelautan dan Perikanan, 2018; Wulan, 2023).

Malaysia's pioneering in the halal supply chain, for example, could be a threat to Indonesia, including the food industry and companies providing Indonesian logistics services. Malaysia already has a "Halal Industry Masterplan" including halal logistics in it, even declaring itself as the "Premier Halal Hub in the World" (Setijadi, 2016).

The Indonesian Government needs a strong role to encourage and facilitate the implementation of halal supply chains in Indonesia, including by preparing infrastructure and facilities in implementing halal logistics or supply chains including warehouses, goods terminals, logistics centers, ports, airports, etc. (Istiqlal, 2023).

By considering Indonesia's geographical conditions and the distribution of its population, halal hub ports are one of the important facilities in implementing halal supply chains in Indonesia. Halal hub port will streamline and make the processes needed to implement a halal supply chain more effective. Efficiency is related to centralized logistics processes which have an impact on achieving better economies of scale. Effectiveness is related to process speed due to the availability of adequate facilities at the port hub.

The view of ports as logistics platforms can make a significant contribution to supply chain efficiency due to their integral position. However, ports can be a bottleneck where the potential for congestion is very real, therefore digital transformation is very necessary to overcome this risk. Therefore, the development of halal logistics must include policies, institutions, infrastructure, facilities, and also digital technology (Clemente et al., 2023).

Several priority programs have been launched for the success of halal hubs based on port logistics, including the codification of halal certification data on trade transactions. This program aims to record transactions and halal certificate data for export and import activities of halal products that occur in the Customs and Excise system and the Indonesian National Single Window (INSW) institution based on valid information from the "Badan Penyelenggara Jaminan Produk Halal" (BPJPH) database. It is hoped that Indonesia will be able to have accurate halal product trade statistical data to support the development of the halal industrial sector in the future. This program also provides the benefit of strengthening the halal

traceability system in domestic and foreign trade, through readiness to exchange halal certification data electronically and securely between countries in the world (Putra, 2022).

## 2. Blue Economy and Muslim Friendly Tourism (Halal Tourism)

The development of the blue economy in Indonesia has a role in supporting Indonesia to achieve the Sustainable Development Goals (SDGs). Achieving the SDGs targets can be accelerated directly and substantially through the advancement of the blue economy approach. There is a strong interdependence between the SDGs due to the complexity of interactions between social, economic and ecological components, including across scales, and this requires developing an understanding of the interactions and interdependencies between various policy fields at the national level (Sambodo et al., 2023).

Indonesia was designated as the world's best halal tourist destination in 2023 by the Global Muslim Travel Index (GMTI) standard, outperforming 138 destinations from all over the world (*Global Muslim Travel Index 2023*, n.d.). As the world's best halal tourist destination, Indonesia has recorded a gradual increase from ranking 6th in 2015, ranking 4th in 2016, ranking 3rd in 2017, ranking 2nd in 2018, ranking 1st in 2019 and ranking 4th in 2021 (Finaka, 2022).

The World Bank estimates that Indonesia's maritime economy has an annual value of more than USD 280 billion, with maritime development and manufacturing being the two main sectors. Coral tourism alone is worth USD 3 billion in a country famous for its coral wealth. Marine capture fisheries production experienced a trade surplus of USD 4.12 billion in 2018, which shows high demand from the international market (Sambodo et al., 2023).

Indonesia's efforts to achieve the best position are being taken seriously, including by creating the Indonesia Muslim Travel Index (IMTI) which refers to the GMTI standard. The GMTI report analyzes based on 4 strategic assessment criteria, namely access, communication, environment and service.

Ease of access in this case includes visa requirements, air and sea connectivity, and land access to the destination. Transportation infrastructure in terms of the quality of roads, trains, and air and sea transportation services is also an important metric in determining ease of access in tourist destinations. So this is a concern in itself for developing the blue economy because it has a lot of marine tourism potential that is recognized worldwide (Pavlinović et al., 2023).

The assessment of communication includes language skills at the destination, while from an environmental perspective it will assess whether Muslim tourists have a safe place to enjoy their stay. Meanwhile, service to Muslim tourists is the most important criterion. Services in this case include facilities that must meet the needs of Muslim tourists, including halal food, prayer areas and other Muslim facilities. This condition cannot be separated from the potential of Indonesia's blue economy which dominates national geographical conditions.

## 3. Digitalization of the Blue Economy and Halal Industry

The growth of the digital economy can be seen through the growth of two subsectors, namely e-commerce and fintech. Both have shown promising growth over recent times. Bank Indonesia defines fintech as the result of a combination of financial services and technology which ultimately changes the business model from conventional to moderate, where initially you had to pay face to face and bring a certain amount of cash, now you can make long-distance transactions in a matter of seconds. E-commerce can be defined as buying and selling transactions for goods and services, whether between businesses, households, individuals, governments, and other public or private organizations, carried out via the internet. Ordering goods is done via the internet, but payment and final delivery of goods and services can be done online or offline (cash on delivery). Sharing economy or marketplace platforms are also included in the e-commerce category (KPPN/BAPPENAS, 2018).

Digitalization is one of the main drivers of modern development. The rapid emergence and development of digital technology has accelerated the transformation of the maritime industry.

The use of digital solutions and technology serves to increase operational efficiency and competitiveness. With the help of sensors and other electronic sources, data can be collected and analyzed to increase the efficiency of the maritime industry (Pavlinović et al., 2023). In this way, informed decisions can be made, and operational quality can be improved.

The development of the digital economy is one of the main strategies for Indonesia's economic transformation and is aimed at accelerating economic recovery after the COVID-19 pandemic. The development of the digital economy is also driven by a shift in people's behavior who tend to use digital platforms in various sectors (Pavlinović et al., 2023).

Digitalization in the maritime sector offers many advantages for the management and rapid exchange of information. This also encourages the development of standardization of existing ports by influencing work flow, reducing transit and waiting times at a port. Digitalization also plays an important role in the education and training of seafarers. The huge benefits of digitalization are also seen in various maritime forecasts, such as the number of passengers in a port at a certain location at a certain time, or estimating damage to ships or maintenance equipment. Forecasts shape business and management strategies and influence decision making in the maritime industry. Meanwhile, in the environmental dimension, digitalization helps monitor ecological efficiency with the aim of reducing harmful gas emissions into the atmosphere, thereby protecting natural marine ecosystems (Pavlinović et al., 2023).

The existence of a system built in the digitalization of the blue economy forms market transparency and openness. Each agent in the supply chain will freely gain access to check product traceability. This concept is an important keyword for marketing halal products. The halal value guarantee can be freely accessed by every stakeholder who has an interest in halal products. Apart from that, efficiency and effectiveness due to digital systems will make it easier for consumers to make purchases. This will easily open global halal market opportunities.

The positive trend in digital economic development is also in line with investment developments (L. T. Ha, 2024). The investment value of Indonesia's digital economy throughout Q1-2021 was 4.7 billion USD and has exceeded the highest value over the last four years. This achievement makes Indonesia the most popular investment destination in Southeast Asia, surpassing Singapore. The digital economy in Indonesia is the highest in Southeast Asia, its economic value in 2021 was recorded at around USD 70 billion, and is estimated to reach USD 146 billion in 2025. Apart from investment, Indonesia also has various potentials that can strengthen opportunities for accelerating digital economic development. In 2021, the value of Indonesian e-commerce transactions will reach IDR 401.25 trillion, with a transaction volume of 1.73 billion (kominfo.go.id, 2022).

Bank Indonesia data shows that the nominal value of halal product transactions through electronic commerce has cumulatively grown 49.52% compared to the same period in 2019. The digitalization process has also occurred in payment methods used by the public during the pandemic. During 2020, payment methods for halal product transactions in the e-commerce marketplace were dominated by electronic money and bank transfers, accounting for 42.10% and 23.08% of the share respectively and this is still the case today (Shari, 2021). In general, the volume of digital financial transactions in Indonesian banking in March 2021 reached 553.6 million or grew 42.47% compared to the same period the previous year. The transaction value also rose 26.44% or reached IDR 3,025.6 trillion yoy. This includes sharia banking which is expected to become a supporting sector for the development of Indonesia's halal industry (Shari, 2021).

## CONCLUSION

The work process at the Indonesian halal center which is supported by digital technology aims to help product inspections so that they arrive quickly in the hands of consumers. This is to shorten the distribution chain of goods so that the products received are in good condition (thoyyib), which is also

one of the halal requirements. The existence of a global halal hub makes this process even more possible to be realized.

Integrating digital transformation with the blue economy in efforts to accelerate the global halal hub makes Indonesia start an initiative for sustainable and better global halal progress. This aims to strengthen halal integrity in world trade.

Efficiency, effectiveness and transparency are the main targets in implementing blue economy digitalization in the global halal hub. The international trade supply chain cannot be separated from the role of the maritime sector, making the blue economy a central determinant of halal guarantees in the distribution of halal products in global trade.

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