How is the correlation between Halal Certification and the Growth of Indonesia's Export Economic Value?

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ABSTRACT

Indonesia, as the country with the largest Muslim population in the world, holds immense potential to lead the global halal sector. Efforts to accelerate halal certification, particularly in the food, beverage, and cosmetics industries, have yielded positive outcomes. By mid-2023, 38,480 products had obtained halal certification, driven by initiatives like the Free Halal Certification (Sehati) program and national campaigns. Halal certification not only serves as a legal requirement but also enhances product competitiveness in domestic and international markets. However, despite the projected global halal market size of USD 2.3 trillion by 2024, Indonesia's contribution remains relatively small compared to countries like Malaysia and the United Arab Emirates. This study investigates the correlation between halal certification issuance and export value, revealing a weak negative correlation, with the export value of halal products declining in 2023 due to global economic challenges. The findings underscore the importance of addressing external factors and adopting a comprehensive approach, involving both government and businesses, to enhance Indonesia's halal export performance and ensure long-term growth.

Keywords: Halal certification, Global halal market, Indonesia export, Market access.

1   Introduction

Indonesia, as the country with the largest Muslim population in the world, has significant potential to become a leader in the global halal sector. In recent years, there have been substantial efforts to accelerate the halal certification process across various sectors, particularly in food, beverages, and cosmetics. Data from BPJPH shows a significant increase in the number of halal-certified products, with an ambitious target of 10 million halal-certified products by 2024. By mid-2023 alone, 38,480 products had already received halal certification.

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These efforts have been driven by various programs, such as the Free Halal Certification (Sehati) program targeted at micro, small, and medium enterprises (UMKM). Additionally, strategic initiatives like national campaigns across all 34 provinces, partnerships with ministries and institutions, and facilitation programs for small business owners have contributed to this growth. Halal certification is not only a legal requirement but also adds value, enhancing product competitiveness in both domestic and international markets. [1]

The global halal sector holds significant economic value, with a projected market size of USD 2.3 trillion by 2024. However, Indonesia's contribution to this market remains relatively small, despite its potential as a major halal exporter. Countries like Malaysia and the United Arab Emirates have already emerged as key players in the global halal market, highlighting the importance of halal certification as a strategy for enhancing exports. [2]

The gap in Indonesia's halal certification system compared to competitors like Malaysia and the UAE lies in the longer and more complex certification process, as well as limitations in infrastructure and resources. In Indonesia, the halal certification process involves multiple institutions, such as the Indonesian Ulema Council (MUI), which makes it more complex and time-consuming. Meanwhile, Malaysia and the UAE have more efficient, centralized, and faster systems, supported by infrastructure that facilitates the inspection and certification of halal products nationwide. This enables them to better meet the demands of international markets. Additionally, the closer involvement between the government and the private sector in Malaysia and the UAE supports the systematic and integrated development of the halal industry. In Indonesia, the private sector sometimes struggles to keep up with evolving regulations, while halal certification is more reliant on religious institutions. This also affects the international recognition of Indonesia's halal certification, which is less well-known compared to Malaysia and the UAE. To close this gap, Indonesia needs to improve the efficiency, transparency, and international recognition of its halal certification system. [3]

In the export context, halal certification serves as a gateway to international markets, particularly in predominantly Muslim countries such as the Middle East, South Asia, and European countries with significant Muslim populations. Nevertheless, Indonesian exporters still face challenges, including intense competition, product quality, and limited integrated promotion efforts.

Research by Dinar Standard in the Global Islamic Economy Report reveals that halal-certified products attract higher interest in international markets due to their adherence to quality standards and Muslim consumer trust. While Indonesian halal certification is recognized as among the best, market access still needs to be strengthened through enhanced promotion and branding efforts. [1], [2]

The Indonesian Agency for Halal Product Assurance envisions Indonesia becoming a leading producer of halal products globally. Therefore, building a robust halal ecosystem through certification remains a top priority. This study seeks to examine the correlation between the number of halal-certified products and export volume, as previous research, such as that conducted by Faridah (2019), has shown that halal certification can boost the economic value of products and expand market access. [4]

With its vast potential, halal certification is a strategic step to enhancing Indonesia's product competitiveness. Research on the correlation between halal-certified products and export volume is expected to strengthen national policies and accelerate Indonesia's role as a key player in the global halal market.

2   Materials and methods

In this study, we used Pearson's Correlation Theory, which is a statistical method used to measure the strength and direction of the linear relationship between two continuous variables. This method, also known as the Pearson product-moment correlation coefficient, has values that range from -1 to 1. A value of -1 indicates a perfect negative relationship, a value of 1 indicates a perfect positive relationship, and a value of 0 indicates no linear relationship between the two variables.

Pearson's correlation is used to evaluate how strong the linear relationship between two variables is and whether an increase or decrease in one variable is related to an increase or decrease in the other variable. For example, if variables X and Y have a strong positive correlation, an increase in the value of X is likely to be followed by an increase in the value of Y. However, it is important to note that Pearson's correlation only measures linear relationships and cannot detect non-linear relationships between variables. Additionally, correlation does not imply causation; it only measures the strength of the relationship between two variables.

Data inconsistencies, such as missing values or extreme outliers, can affect the results of Pearson's correlation analysis. If there are missing data, a common approach is to remove the rows with missing data or impute the missing values with the mean or median of the available data.

The use of Pearson's correlation in this analysis is justified because the variables analyzed are continuous and are expected to have a linear relationship. Pearson's correlation is effective for measuring the strength and direction of the relationship between these two variables, especially when the data shows a normal distribution and there are no significant non-linear relationships. If the data meets these assumptions, Pearson's correlation is the appropriate method to use. [5]

The formula for the correlation coefficient is expressed as follows:

$$r = \frac{n(\sum XY) - (\sum X)(\sum Y)}{\sqrt{\left[n(\sum X^2) - (\sum X)^2\right]\left[n(\sum Y^2) - (\sum Y)^2\right]}}$$

Explanation:

- r = correlation coefficient
- X = value of variable X
- Y = value of variable Y
- $\sum XY$ = sum of the product of X and Y
- $\sum X^2$ = sum of the squares of X

- $\sum Y^2$ = sum of the squares of Y
- n = number of data pairs

The value of **r** always lies within the range of **-1 to 1**:

- **r = 1** : Perfect positive correlation
- **r = −1** : Perfect negative correlation
- **r = 0** : No correlation
- **0 < r < 1** : Weak to strong positive correlation
- **−1 < r < 0** : Weak to strong negative correlation

3   Background Theory

3.1   What is Halal Certification

Halal certification is an official document issued by an authorized institution to declare that a product meets halal standards according to Islamic law. Halal certification encompasses food, beverages, medicines, cosmetics, and other consumer goods. In the global context, halal certification not only serves as proof of compliance with religious regulations but also adds value to products in international markets, particularly in countries with a Muslim majority. [6]

3.2   Halal Certification Regulations

Halal certification regulations in Indonesia are governed by *Law No. 33 of 2014 on Halal Product Assurance* [7]. This law stipulates that all products circulating in Indonesia must have halal certification, except for products exempted from halal requirements. Additionally, its implementation is regulated through *Government Regulation No. 31 of 2019* [8] and various technical regulations from BPJPH and LPPOM MUI. These regulations aim to protect Muslim consumers and enhance the competitiveness of Indonesian products in the global market.

3.3   Development of Halal Certification

The development of halal certification in Indonesia shows a positive trend, in line with the government's efforts to accelerate the implementation of halal product assurance. According to BPJPH data, as of 2023, more than 38,000 products have been certified halal. The government has also launched programs such as the Free Halal Certification Program (Sehati) to support micro, small, and medium enterprises (MSMEs). Internationally, halal certification is increasingly recognized as a global standard for ensuring product quality and safety. [6]

3.4   Research on the Importance of Halal Certification for Businesses

Research shows that halal certification has a positive impact on businesses. A study by Faridah (2019) [4] revealed that halal-certified products are more attractive in international markets due to their perceived higher quality and reliability. Additionally, research by Huda et al. (2021) [9] found that halal certification increases Muslim consumer loyalty, expands market

access, and raises product value, making it a crucial strategy for businesses to compete globally.

3.5 What is Competitive Advantage and Its Impact

Competitive advantage refers to the superiority a business has over its competitors, enabling it to retain customers and enhance performance. In the context of halal certification, competitive advantage can be achieved through adherence to halal standards, product innovation, and service quality. Chen et al. (2024) [10] emphasized that competitive advantage can improve revenue, business sustainability, and consumer trust. Hamid et al. (2021) [11] further highlighted that businesses with halal certification are more trusted by consumers and tend to experience increased sales, ultimately supporting business sustainability.

3.6 The Development of Indonesia's Exports and the Factors Influencing it

Over the past 10 years, Indonesia's export performance has shown fluctuations influenced by global dynamics and domestic conditions. From 2015 to 2016, export values experienced a significant decline due to weakened global demand and falling prices of key commodities [12]. However, from 2017 to 2022, Indonesia's exports recorded stable growth, peaking in 2022 at a value of USD 291.9 billion, driven by high demand for coal, palm oil, and manufactured products. A decline of 11.33% in 2023 to USD 258.82 billion reflects new challenges such as global economic slowdown and international trade uncertainties [13].

The factors influencing Indonesia's export development include the rupiah exchange rate, commodity prices, inflation, and international trade policies. Fluctuating exchange rates can affect the competitiveness of Indonesian products in global markets, while commodity prices determine export revenues, particularly for leading products such as vegetable oils and coal. Moreover, competitiveness with other countries like Malaysia and the UAE poses challenges requiring attention, especially through improving product quality and diversifying export products.[14]

Going forward, Indonesia needs to develop more adaptive strategies to address global and domestic challenges. Product and market diversification, production innovation, and policies that enhance international competitiveness are key to sustaining export growth. Additionally, leveraging opportunities from global trade trends and strengthening integration into international supply chains can help maintain the stability of Indonesia's export performance.

3.7 The Relationship Between Competitive Advantage and Halal Certification

Halal certification can serve as a source of competitive advantage for businesses, particularly in markets with a significant Muslim consumer base. It not only helps build consumer trust but also expands marketing networks to international markets. This competitive advantage directly impacts business revenue, supports business sustainability, and enhances consumer loyalty.

Overall, the literature demonstrates that halal certification is not only relevant in terms of legal and religious compliance but also serves as a strategic tool to create sustainable competitive advantages in the global market.

4   Results and discussion

4.1   Development of Halal Certificate Issuance in Indonesia (2018–2024)

The Halal Product Assurance Agency targets the issuance of 10 million halal certificates by 2024. The Halal Product Assurance Agency Head, stated that despite limited funding, The Halal Product Assurance Agency will strive to achieve this target through collaboration with ministries, agencies, state-owned enterprises, and the private sector. In addition, The Halal Product Assurance Agency is also focused on enhancing international cooperation to strengthen the recognition of Indonesian halal certification in global markets. The following table shows the number of halal certificates issued from 2018 to 2024, reflecting the agency's progress toward its ambitious goals, taken from [15], [16], [17].

Table 1. Number of halal certificates (2018-2024)

Year	Number of halal certificates (certificates)
2018	17,398
2019	15,495
2020	20,493
2021	25,491
2022	107,096
2023	2,944,497
2024	4,418,343

The table reflects significant growth in the issuance of halal certificates in Indonesia from 2018 to 2024, with a sharp increase especially after 2021. During the period from 2018 to 2021, the number of issued halal certificates increased gradually, with a relatively small average annual increase. However, this situation changed drastically in 2022, when the number of halal certificates nearly quadrupled compared to 2021, reaching 107,096 certificates. This trend indicates a major shift that could be influenced by government policies regarding the acceleration of halal certification, increased capacity of certification bodies, or the implementation of mandatory halal certification programs that began to gain momentum.

Although the target has not been achieved in 2024, in 2023 and 2024, the number of halal certificates surged exponentially, reaching 2,944,497 and 4,418,343 certificates, respectively. This spike is likely the result of increasingly effective government policies encouraging businesses to obtain halal certification, supported by growing public awareness of the importance of halal products. Furthermore, advancements in digital technology and automation in the certification process may have accelerated issuance, allowing more businesses, including SMEs, to access these services. This trend also demonstrates Indonesia's commitment to becoming a global hub for the halal economy, in line with rising demand for halal products both domestically and in international markets. Here is the curve showing the

positive trend of linear growth in halal certificates from 2018 to 2024 using regression analysis.
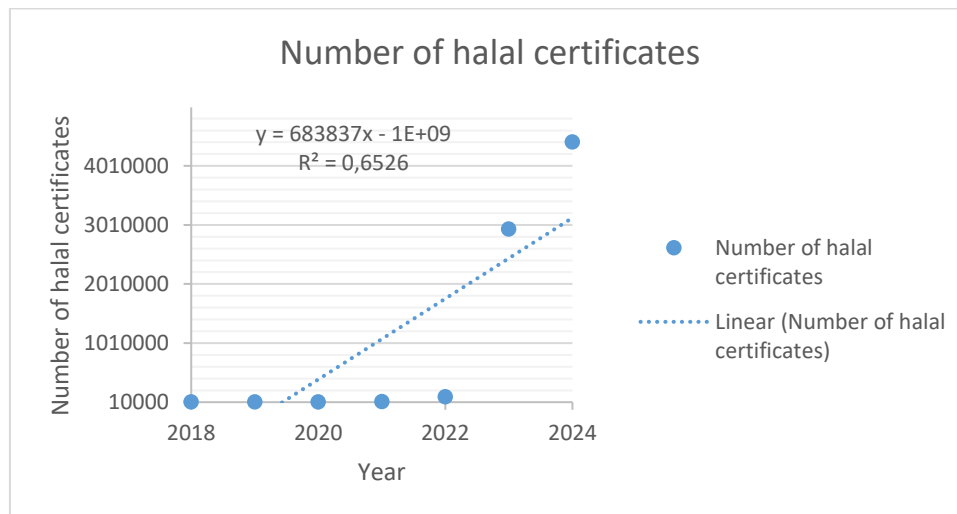

Fig. 1 Linear Trend of Halal Certificates Growth (2018–2024)

The graph shows the number of halal certificates from 2018 to 2024. Until 2022, the number of halal certificates remained relatively low and stagnant, as indicated by the data points close to the horizontal axis. The linear trend (dotted line) demonstrates a steady increase in the number of halal certificates year by year. The linear regression equation y = 683,837x - 1E+09 indicates that each year there is an average growth of approximately 683,837 halal certificates. The R^2 value of 0.6526 suggests that about 65.26% of the variation in the number of halal certificates can be explained by this linear model. Although the model is fairly strong, approximately 34.74% of the variation remains influenced by factors beyond the linear trend.

This graph indicates that, although the growth of halal certificates was relatively slow during the early period (2018–2022), projections for the coming years (towards 2024) show a positive trend and significant growth. The increasing slope of the linear model suggests that the number of halal certificates is expected to rise substantially, driven by ongoing policy efforts, enhanced awareness, and advancements in certification processes.

Given this trend, it is crucial to continue evaluating the effectiveness of existing policies while ensuring that the accelerated halal certification process maintains quality and transparency. The surge in the number of halal certificates can also be seen as a positive indicator of the increasing competitiveness of Indonesia's halal products, driving the growth of the Islamic economy and opening opportunities for halal product exports to global markets. However, challenges such as meeting standards, monitoring compliance, and providing assistance to businesses, particularly SMEs, must remain a focus to ensure this growth is sustainable and equitable across all economic sectors.

4.2   Development of Halal Product Export Value in Indonesia (2018–2024)

The development of halal product export value in Indonesia has shown significant growth from 2018 to 2024, reflecting the country's increasing role as a major player in the global halal industry. As the world's largest Muslim-majority country, Indonesia has leveraged its

abundant resources and strategic initiatives to position itself as a key exporter of halal goods. This includes food and beverages, pharmaceuticals, cosmetics, and fashion products, which meet stringent halal certification standards and cater to the rising global demand for halal products.

Various government policies and collaborations with private sectors have bolstered Indonesia's efforts to penetrate international markets. Programs such as the Halal Product Assurance Law and partnerships with international certifying bodies have enhanced the credibility of Indonesian halal products. Coupled with the growing middle-class population in Muslim-majority countries and increased awareness of halal lifestyles globally, these initiatives have driven the consistent upward trajectory of Indonesia's halal product exports. Here is the export value of Indonesia's halal products from 2018 to 2024, based on data from the Ministry of Trade and the National Committee for Islamic Economy and Finance (KNEKS). [18]

Table 2. Export value of halal products (2018-2024)

Year	Export value of halal products ($ miliar)
2018	40,5
2019	43,6
2020	46,7
2021	48,3
2022	52,1
2023	42,3
2024	43,2

From the table of Indonesia's halal product export values from 2018 to 2024, a varied trend is observed. Between 2018 and 2022, export values show consistent growth, starting at $40.5 billion in 2018 and reaching a peak of $52.1 billion in 2022. This increase reflects positive growth in halal product exports, supported by rising global demand and strategic government initiatives.

However, a significant decline occurred in 2023, with export values dropping to $42.3 billion. This decrease was likely influenced by external factors such as global economic challenges or trade barriers. In 2024, export values slightly increased to $43.2 billion, indicating recovery efforts, although they have not yet returned to the 2022 peak. This data underscores the importance of sustained strategic efforts to ensure stability and growth in the halal product export sector. Here is the curve showing the positive trend of linear growth in Indonesia's halal product export values from 2018 to 2024 using regression analysis.
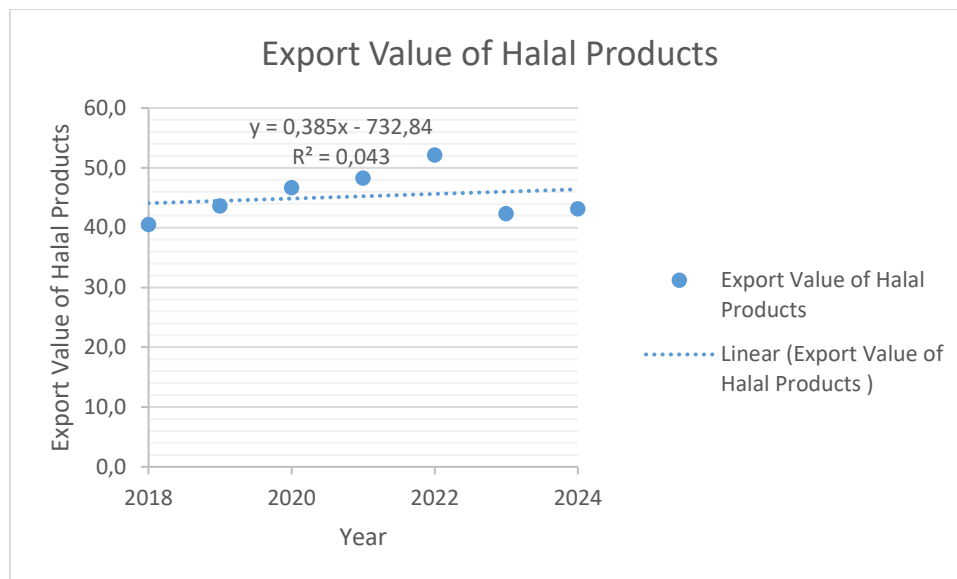
Fig. 2 Linear Trend of Export Value of Halal Products (2018–2024)

Based on the export value curve of halal products from 2018 to 2024, there appears to be a stagnant trend with slight linear increases. The linear regression line shows the equation y = 0.385x - 732.84, with a coefficient of determination (R^2 = 0.043), indicating a very weak relationship between the year and export value. This value suggests that variations in export data cannot be fully explained by time alone, and other external factors are likely influencing the movement of halal product exports.

During the early period (2018–2022), export values gradually increased, peaking around 2022. However, after that, a significant decline occurred in 2023, evident from data points below the linear trend. Although there was a slight recovery in 2024, the values remain far from the previous peak. This indicates potential barriers such as a decline in global demand, macroeconomic factors, or trade policy affecting Indonesia's halal product exports.

Overall, while the linear trend line suggests positive growth, the low R^2 value indicates that this trend is not particularly strong. Therefore, more strategic efforts are needed to significantly boost halal product exports and ensure sustainable growth, such as expanding export markets, enhancing product competitiveness, and strengthening halal certification infrastructure.

4.3 The Correlation Between The Number of Halal Certificates and The Export Value of Halal Products In Indonesia

The relationship between the number of halal certifications and the export value of halal products can be analyzed using correlation methods to determine the extent to which increased halal certification impacts export value. Halal certification plays a crucial role in building consumer trust, expanding markets, and meeting international trade requirements. Therefore, it is expected that as more halal products receive certification, the export value will increase along with higher consumer trust and competitiveness in global markets. However, to better understand this relationship, a correlation analysis is needed to measure how changes in the number of halal certifications contribute to fluctuations in the export

value of halal products. The following calculation was performed using Microsoft Excel with the correlation analysis method.

Table 3. The correlation coefficient between the number of halal certificates and export value

	Number of halal certificates	Export value of halal products
Number of halal certificates	1	
Export value of halal products	**-0,4**	1

The table presents the correlation results between the number of halal certificates and the export value of halal products, with a correlation coefficient of -0.4, indicating a weak negative relationship. This suggests that while there is some association, the relationship is not strong enough to significantly impact export performance. Despite an increase in the number of halal certificates, other factors such as global demand, trade policies, and product competitiveness likely play a larger role in influencing export performance. Therefore, the low correlation implies that the number of certificates may not directly lead to substantial changes in the export value.

Several external factors can affect the relationship between halal certification and export value. One such factor is market saturation, where demand for halal products may stagnate in international markets, limiting the potential benefits of increased certification. Additionally, economic downturns, whether global or regional, can impact consumers' purchasing power, leading to reduced imports, including halal products, even when certification numbers rise. International trade policies, tariff barriers, and logistical inefficiencies can also hinder the positive impact of certification on export performance.

To improve the export value of halal products, a more comprehensive strategy is necessary. The government should focus on strategic negotiations with target export countries to simplify market access and foster partnerships that benefit exporters. On the business side, companies should enhance product quality by improving packaging, extending product shelf life, and intensifying marketing efforts to attract global consumers. A coordinated approach involving both government and private sector initiatives will help boost the competitiveness of Indonesian halal products and drive significant growth in export value.

5   Conclusion

1. The development of halal certification issuance in Indonesia from 2018 to 2024 shows a positive trend. Especially after 2021, there was a significant surge in the number of halal certificates issued, reflecting the serious efforts of the Halal Product Assurance Agency (BPJPH) to achieve the target of issuing 10 million halal certificates by 2024. Factors such as government policies, collaboration with various stakeholders, and increasing awareness of the importance of halal certification have played a role in driving this growth. Although the target was not fully achieved by 2024, the rapid increase in the final years demonstrates Indonesia's commitment to becoming a global halal hub.

2. The development of the export value of halal products in Indonesia from 2018 to 2024 reflects consistent growth until 2022, peaking at $52.1 billion. However, a significant decline occurred in 2023, influenced by external factors such as global economic challenges and trade barriers. Although there was a slight recovery in 2024, export values remain far from the previous peak. This indicates that while Indonesia has significant potential in halal exports, more strategic efforts are needed to ensure stability and long-term growth.

3. There is a weak negative correlation between the number of halal certificates and the export value of halal products, indicating that the relationship is not strong and insignificant. However, there is still potential to improve Indonesia's halal export performance. External factors such as global demand, trade policies, and product competitiveness also influence export performance, so further efforts are needed to maximize this potential. On the government side, strategic steps such as negotiations with target export countries must be strengthened, especially in building partnerships to ease access to international markets. On the other hand, business players need to make significant improvements in product quality, such as enhancing packaging quality, extending product shelf life, and intensifying promotion to attract global consumer interest. Therefore, a combination of integrated efforts from the government and the private sector is crucial to strengthening the competitiveness of Indonesian halal products in the global market and significantly increasing export value.

Acknowledgements

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