

Factors of competitiveness and strategies to improve exports of chicken products in Indonesia

A. H. Wibowo^{1,2}, M. A. U. Muzayyanah^{1,*}, and B. Guntoro¹

¹*Faculty of Animal Science, Universitas Gadjah Mada, Yogyakarta 55223, Indonesia*

²*Directorate General of Livestock and Animal Health Services,
Ministry of Agriculture, Jakarta 12550, Indonesia*

**Corresponding E-mail: m_anggriani_um@ugm.ac.id*

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ABSTRACT

The livestock subsector contributes around sixty percent of the gross domestic product (GDP) of the agricultural sector, and poultry products approximately 80.77% of total national livestock production. Although Indonesia's poultry industry shows great potential, exports of Indonesian broiler products still face various obstacles, for instance geographical distance between countries, exchange rates, Covid-19 pandemic and implementation of Free Trade Agreements (FTA). This study aimed to analyze the determinant factors of the export competitiveness of Indonesian chicken products in the international market with a descriptive quantitative method using Likert-scale questions. This study involved the entire population of 45 individuals, consisting of poultry companies engaged in export activities and relevant government institutions. The Gravity Model approach was employed to examine economic and geographical factors, while the Porter Diamond framework was used to assess the determinants of the industry's competitive advantage. The results showed that geographical distance (-0.09), exporter GDP (0.27), and importer GDP (0.04) affected to export performance. The most influential factors on Indonesia's chicken products export competitiveness were firm strategy, structure, and rivalry—particularly product adaptation to target markets (4.61)—and government support through export procedure simplification (4.59). Furthermore, related and supporting industries were found to have a strong correlation with competitiveness. The strengths, weaknesses, opportunities, and threats (SWOT) analysis resulted diversification strategies in both products and markets, as well as the integration of digital technology in production and distribution become strategic steps to enhance export competitiveness.

Keywords: Chicken, Competitiveness, Exports, Gravity model, Porter diamond.

INTRODUCTION

The livestock subsector plays a vital role in enhancing the economy of Indonesia as a developing country. The poultry industry, as one of the main components of this subsector, holds significant potential to become a leading export commodity for Indonesia. This possibility is highlighted by commodity balance statistics

from the Directorate General of Livestock and Animal Health Services, Ministry of Agriculture Republic Indonesia (2024), which show national broiler meat production capacity at 4.03 million tons, domestic demand at 3.72 million tons, and a surplus of around 0.31 million tons. Furthermore, table eggs had a production capacity of 6.2 million tons, with domestic consumption totaling 6.03 million tons and a

surplus of 0.17 million tons.

Export competitiveness can be defined as a country's ability to produce goods and services that meet international market standards and sustain or enhance the real income of its citizens in a competitive free market (Bhawsar and Chattopadhyay, 2015). In the context of Indonesian chicken products, the factors influencing export competitiveness are highly complex and include production costs, product quality, logistics infrastructure, and government policy. High production costs represent one of the most significant barriers, with research by Arifin *et al.* (2024) indicating that dependency on imported feed ingredients contributes to elevated feed costs, which in turn affects the final product price.

A comprehensive strategy is required to enhance the competitiveness of Indonesia's broiler chicken exports. One key approach is improving production efficiency, which can be achieved through cost-effective feed management and the adoption of more efficient farming technologies (Kumar, 2010). Equally important is the improvement of product quality to ensure that Indonesian poultry products comply with international standards, thereby increasing their acceptance in global markets (Long, 2021). Market diversification also represents a viable strategy to expand access to untapped destinations, as suggested by Al Amri (2021) in his study on export market development. Improvements in logistics infrastructure and cold chain systems are critical, as they play a decisive role in strengthening Indonesia's competitiveness in international trade (Lee *et al.*, 2018).

This study aims to comprehensively examine the factors affecting the export competitiveness of Indonesian chicken products by employing the Gravity Model and Porter's Diamond framework. Furthermore, it seeks to formulate export enhancement strategies through SWOT analysis.

MATERIALS AND METHODS

Primary data were collected through a structured (closed-ended) questionnaire. A Linkert scale was employed to measure respondents level of agreement with specific

statements related to the factors influencing competitiveness and strategies for enhancing the export of Indonesian broiler products. The population consisted of 45 individuals, including poultry export companies and relevant government institutions. A purposive sampling technique was applied, in which respondents were selected based on predetermined criteria directly related to the research objectives. The collected data were employed a descriptive quantitative approach and subsequently analyzed using the Porter Diamond framework and SWOT analysis. The variables in this study were identified through a combination of literature review and stakeholder forum group discussions, particularly with poultry business actors and government representatives directly involved in the export sector. Such an approach allows the research framework to reflect both theoretical foundations and practical insights from the field.

There are four key determinants of national competitive advantage: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and rivalry (Porter, 1990; Vladoš 2019; Sibanda *et al.*, 2025). Additionally, two variables—chance events and government—affect the interaction among these four determinants. Together, these elements form an integrated system that drives competitive advantage, known as Porter's Diamond Theory. This system is illustrated in Figure 1.

Secondary data were utilized to analyze the factors influencing competitiveness using the Gravity Model approach. This analysis aims to identify the variables that may lead to an increase or decrease in exports to major export destination countries. Population, GDP, distance, and exchange rates in the destination countries are hypothesized to affect the volume of Indonesia Chicken product exports. Secondary data on the export value of Indonesian chicken products were obtained from the Central Bureau of Statistics (2024) and Ministry of Trade (2024), while export data for chicken products from other countries were sourced from the United Nations Comtrade database in 2024. The data were compiled using 6-digit Harmonized System (HS) codes over a 10-year period from 2014 to 2023.

Trade patterns involving Indonesian

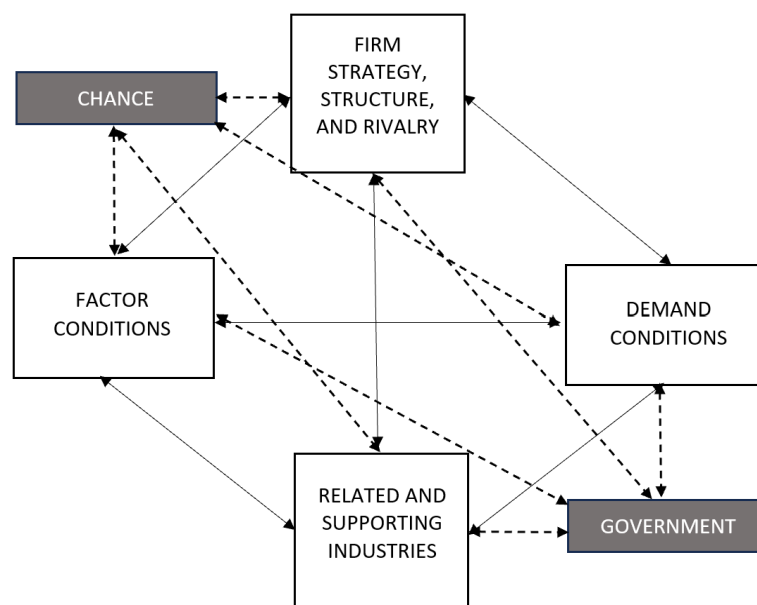


Figure 1. Porter's Diamond Diagram

chicken products and its trading partners can be examined using the gravity model, initially proposed by Tinbergen in 1962. This model serves as a valuable econometric analysis tool. Presently, the gravity model is extensively applied to forecast the effects of various trade policy-related factors, including tariffs and policies enacted in countries that import these products (Shepherd, 2016). Throughout the research timeframe spanning 2014-2023, various additional elements were discerned that may have the capacity to impact the trade dynamics of Indonesian poultry commodities with nations involved in export partnerships. These elements encompass fluctuations in currency conversion rates, the COVID-19 pandemic, in conjunction with free trade arrangements. Consequently, through the application of statistical methods, a gravity model has the capability of undergoing a transformation into a linear model configuration. This is achieved via the utilization of natural logarithmic transformation so as to pinpoint the determinants anticipated to exert influence over the comprehensive trade currents of Indonesian poultry offerings, as follow:

$$\ln VX_{ijt} = \alpha + \beta_1 \ln GDPKO_{jt} + \beta_2 \ln GDPKP_{jt} + \beta_3 \ln DISTEC_{ijt} + \beta_4 \ln RER_{jt} + \beta_5 DFTA_{jt} + \beta_6 DCOV_{jt} + \epsilon_{jt}$$

Where:

VX_{ijt} : Export volume of Indonesian chicken product from exporting country to importing country in year t (tons).

$GDPKO_{jt}$: GDP per capita value of the exporting country in year t (USD).

$GDPKP_{jt}$: GDP per capita value of importing country in year t (USD).

$DISTEC_{ijt}$: Economic distance between exporting and importing countries in year t (km/USD).

RER_{jt} : The real exchange rate of the destination country's currency in year t (exporter's exchange rate/LCU).

$DFTA_{jt}$: FTA dummy variable (value 1 if included in an FTA, whether bilateral, regional, or multilateral, and value 0 otherwise).

$DCOV_{jt}$: Covid-19 pandemic dummy variable [value 1 after the Covid-19 pandemic (2020-2023), and value 0 before the Covid-19 pandemic].

ϵ_{jt} : error term

α : intercept

β_n : coefficient (n = 1, 2, ...)

RESULTS AND DISCUSSION

Factors Influencing the Competitiveness of Indonesian Chicken Products

Table 1. Estimation of the Gravity Model for Indonesian Chicken Product Exports

Indicator	Coefficient (Standard errors)
GDP of Exporting Country	0.27 (0.39)
GDP of Importing Country	0.04 (0.03)
Distance	-0.09 (0.03)***
Currency	-0.02 (0.01)
Other Factors:	
- Covid-19's Pandemic	0.03 (0.07)
- Free Trade Agreement (FTA)	0.11 (0.06)
R-squared	
Total	0.11
	156

*P<0.05; **P<0.01; ***P<.001

International trade in the poultry sector, particularly the export of Indonesian chicken products, is influenced by various economic, geographical, and policy-related factors that affect its competitiveness in the global market (Table 1). The Gravity Model is employed in this study to analyze the determinants that either promote or hinder the export performance of Indonesian chicken products. This model incorporates economic variables such as the GDP of both exporting and importing countries, the geographical distance between countries, exchange rates, as well as external factors such as the Covid-19 pandemic and the implementation of Free Trade Agreements (FTAs).

The results of the analysis show that distance has a negative and significant effect on chicken product exports in Indonesia. The further the destination country is, the smaller the trade volume, which can be caused by increasing transportation costs and challenges in the distribution chain, especially for products that require special handling such as chicken meat and eggs. For Significance level, only the Distance have significance level <0.001, there is no significance level of GDP of exporters and importers on chicken exports

As per Delgado *et al.* (2025), the gravity model that the trade flow between a pair of countries is positively impacted by the products manufactured by each country, using metrics like GDP. It is, however, negatively correlated with the distance separating them, with the assumption that distance increases trade costs.

The exchange rate has a negative influence, however it is not considerable, implying that

exchange rate variations have not been a major role in determining the competitiveness of chicken product exports. This is consistent with the findings of Mehtiyev *et al.* (2021), who found that conversion expenses from one currency to another, as well as the risk associated with potential exchange rate fluctuations, are both lowering trade flows. To clarify, if exchange rate risk increases, the volume of transaction will fall if traders are risk adverse. Meanwhile, the impact of the Covid-19 pandemic is also not significant, indicating that despite global disruption, demand for chickens products remains relatively stable. The COVID pandemic might also substantially impact the international poultry trade, in several month, but at that time export and import of poultry product still continue (Hafez *et al.*, 2021).

On the other hand, FTA has a positive effect on chicken product exports, but not significant, indicating that although free trade agreements open up market opportunities, Technical and SPS (sanitary phytosanitary) regulations are still obstacles to increasing exports of this product. Rachmadi *et al.* (2021) which show that technical regulations are one of the main challenges in increasing the competitiveness of Indonesian agricultural products. Wong *et al.* (2021) also mentioned that the ACFTA deal with ASEAN countries, as an example, stimulates trade from both the import and export sides.

Factors influencing the competitive edge of Indonesian chicken product exports were examined using the Porter Diamond model framework (Porter, 1991), as well as references from Vlados (2019), and Sibanda *et al.* (2025).

Table 2. Results of Porter Diamond Analysis of Competitiveness of Indonesian Chicken Products¹

Factor	Score
Condition Factors	4.39
1. Availability of Seeds	4.50
2. Supply Chain Smoothness	4.50
3. Feed Adequacy and Quality	4.54
4. Availability of Raw Materials for Feed	4.59
5. Government Policy on Feed	4.54
6. Use of Technology in Feed	4.48
7. Feed Quality and Safety Assurance	4.50
8. Transportation and Logistics Facilities	4.33
9. Sources of Financing and Credit	4.20
10. Employee Training Program	4.26
11. Employee Compensation and Incentives	3.98
12. Labor Policy in Operational Efficiency	4.26
Demand Factors	3.95
1. Demand in Recent Years	4.09
2. Market Fluctuations	3.93
3. Increasing Consumer Interest	3.85
4. Product Quality and Standard Certification	4.61
5. Halal Certification	4.28
6. Processed Product Assurance	3.80
7. No Special Preferences	3.07
Related and Supporting Industry Factors	4.11
1. Routine Communication with Other Industries (Feed, Medicine, etc.)	4.13
2. Partnership with Logistics Companies	4.17
3. Collaboration with Industry Associations	4.04
4. Feed Technology Innovation	4.02
5. Health Management Innovation	4.13
6. Collaborative Program	4.02
7. Business Cooperation with Other Industries	4.26
Corporate Strategy, Structure, and Competition Factors	4.41
1. Product Conformity with Destination Country	4.61
2. Relations with the Government of the Destination Country	4.41
3. Department Special for International Sales	4.41
4. Price Changes Automatically Significant	4.26
5. Product Quality Oriented Strategy	4.37
6. Price Balancing Strategy	4.39
Government Factors	4.41
1. Simplification of Export Procedures	4.59
2. The Role of Government in Increasing Access	4.57
3. Provision of Fiscal Incentives	4.48
4. Training Program or Export Workshop	4.30
5. Supervision Product	4.50
6. Facility Certification Product	4.33
Opportunity Factor	4.36
1. International Trade Agreements	4.37
2. Pricing Strategy Adjustment	4.17
3. Improving Operational Efficiency	4.35
4. Product Quality Improvement	4.41
5. Product Quality Certification	4.54
6. Product Distribution Efficiency	4.43
7. Product Diversification	4.43
8. Use of Latest Technology	4.39
9. Product Packaging Development	4.28
10. Exploration of Bilateral Relations	4.35
11. Price Competition Strategy with Competitor Countries	4.50
12. Ease of Access to Market Information	4.13

¹Processed primary data.

This framework is frequently utilized to assess the competitiveness of a sector based on six key elements, which include (1) Factor Conditions, (2) Demand Conditions, (3) Related and Supporting Industries, (4) Company Strategy, Structure, and Rivalry, (5) Role of Government, and (6) Opportunities. This research employed the Porter Diamond model to evaluate the competitive status of Indonesian chicken product exports. Information was gathered from 45 respondent, comprising companies within the chicken sector engaged in production and international exporting, alongside the governmental bodies responsible for overseeing export initiatives. (Table 2).

In this study, the Company's Strategy, Structure, and Competition Factors and the Government Factor proved to be the two factors that most influenced the competitiveness of Indonesian chicken product exports. Product adjustment to the export destination country (4.61) is a key factor that increases competitiveness, because companies that are able to adjust their products to the needs of the international market will have a stronger competitive advantage. The finding in line the result of study Mahatamnuchok and Banjongprasert (2022) that product differentiation is the firm's ability to attract foreign customers, in order to stand out from competitors. It involves the development of innovative product design which is important for competitive advantage. Moreover, export organization should focus on new product designs, special purposes of use, and strong product functionality, all of which must be excellent. Finally, both brand recognition and product differentiation elements are strongly validated to potentially assist better organizational performance. In addition, the company's strategy involving relations with the government of the export destination country and the existence of a special department for international sales (4.41) also greatly influences the smoothness of exports. This is in line with the results of the study (Onyiriuba *et al.*, 2020) which emphasizes that companies that have an organizational structure that supports exports, including a special department for the international market, are able to respond to global market challenges more effectively.

On the other hand, government factors also play a very important role in increasing the competitiveness of Indonesian chicken product exports, especially through simplifying export procedures (4.59) and providing fiscal incentives (4.48), which help facilitate international trade. This study is in line with the findings Aiginger and Rodrik (2020), which state that government policies that support international trade, such as reducing tariff barriers and simplifying export procedures, play a major role in accelerating access to the global market. (Stoian *et al.*, 2016) also stated that policies that facilitate international trade through the provision of fiscal incentives and export training programs will strengthen the competitiveness of domestic companies in facing global competition. In addition, product certification facilities (4.50) provided by the government are important to ensure that Indonesian chicken products meet international standards, this is in line with the findings (Joo *et al.*, 2018) stating that product quality certification is a crucial component in maintaining the reputation and competitiveness of products in the international market.

The results of the correlation analysis in Table 3 show that related and supporting industries have a strong correlation with corporate strategy, structure, and competition ($r = 0.60$), indicating the importance of collaboration between industrial sectors and supporting sectors, such as logistics, feed technology, and others, in strengthening export competitiveness. Synergy between these various parties is very important to achieve operational efficiency and success in the international market. (Aiginger and Rodrik, 2020) suggests that industrial policy and collaboration strategies between related sectors can drive global competitiveness, where success in the international market is highly dependent on the close relationship between industry and supporting sectors.

In addition, the opportunity factor shows a strong correlation with almost all other factors, including government ($r = 0.60$), indicating that government policies and strategies are closely related to the opportunities that can be exploited by the industry. (Lazzarini, 2015) emphasized that government policies that encourage collaboration between sectors can create

Table 3. Correlation of Factors that Influence Power Competition Export Indonesian Chicken Products

	CF	DF	RSIF	CSSCF	GF	OF
CF	-					
DF	0.17	-				
RSIF	0.46*	0.22	-			
CSSCF	0.33	0.28	0.60**	-		
GF	0.21	0.13	0.44*	0.60**	-	
OF	0.29	0.19	0.60**	0.60**	0.60**	-

CF = Condition Factors; DF = Demand Factors; RSIF = Related and Supporting Industry Factors; CSSCF = Corporate Strategy, Structure and Competition Factors; GF = Government Factors; OF = Opportunity Factors; * moderate correlation; ** strong correlation; *** very strong correlation

competitive advantages. This includes providing incentives for exports and trade policies that support international market access. These policies create greater opportunities for the industry to reach global markets more easily and efficiently.

This research is in line with the findings (Gereffi and Lee, 2016) stating that the interaction between industry actors and government in the global value chain is very important in creating competitive advantage. They emphasize that companies that are well integrated in global networks tend to be more successful in accessing international markets, thanks to support from related sectors and policies that facilitate global trade. Similarly, research (Estrada *et al.*, 2016) on coopetition shows that the interaction between companies and government, as well as policies that support innovation and efficiency, improve export performance and product competitiveness in the global market.

Strategies to Enhance the Export Performance of Indonesian Chicken Products

Indonesia's chicken industry holds significant potential in international trade. However, to enhance export competitiveness, appropriate strategies are needed to address global challenges. This study employs a SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis to identify internal and external factors that influence the chicken industry (Table 4). A total of 45 respondents—comprising poultry industry companies actively engaged in production and export, as well as government officials responsible for export activities provided insights into the current state of the

industry.

From the strengths perspective, Indonesia's chicken industry possesses several advantages that support its export competitiveness, including compliance with food safety and hygiene standards (4.17), the adoption of modern technology and management systems (4.39), and the availability of skilled labor (4.46). The implementation of HACCP standards (4.67) serves as a key factor in ensuring that Indonesian chicken products meet international requirements, thus providing a competitive edge in export markets (Rachmadi *et al.*, 2021).

However, there are several weaknesses that continue to constrain the industry's export performance. One of the primary weaknesses is the dependence on imported raw materials (3.93), which makes the industry vulnerable to global price fluctuations (Hoang, 2020). In addition, regulatory uncertainty (4.35) and limitations in infrastructure and distribution systems (4.33) remain significant challenges that need to be addressed to enhance the industry's global competitiveness (Karam *et al.*, 2022).

Beyond internal factors, Indonesia's chicken industry also faces various opportunities that can be leveraged to improve export competitiveness. Global demand for chicken products continues to rise, particularly in East Asia (4.18), the Middle East (4.07), and Europe and the Americas (4.17) (Loredana, 2016). Furthermore, supportive government policies (4.30) and improvements in infrastructure (4.26) represent opportunities that can be optimized to expand export markets.

On the other hand, the industry is exposed to several threats that could hinder its competitiveness. These include intense

Tabel 4. Results of Competitiveness SWOT Analysis Indonesian Chicken Products¹

Indicators	Mean	Weight	Rating	Score
Strengths	4.37	1.00	30.33	3.38
1. Product Quality	4.11	0.10	3.11	0.32
2. Safety and Hygiene Standards	4.17	0.11	3.17	0.34
3. Availability of Quality Feed	4.41	0.11	3.41	0.38
4. Modern Technology and Management	4.39	0.11	3.39	0.38
5. Land Availability	4.24	0.11	3.24	0.35
6. Availability of Local Feed Raw Materials	4.41	0.11	3.41	0.38
7. Experienced and Skilled Workforce	4.46	0.11	3.46	0.39
8. Delivery Speed and Efficiency	4.46	0.11	3.46	0.39
9. HACCP (Hazard Analysis Critical Control Point) standards	4.67	0.12	3.67	0.44
Weakness	4.18	1.00	22.28	-3.19
1. Limitations Infrastructure	3.85	0.13	2.87	0.38
2. Limited Production Access	3.93	0.13	2.93	0.39
3. Dependence on Imported Raw Materials	4.33	0.15	3.33	0.49
4. Limitations of Feed Technology	4.33	0.15	3.33	0.49
5. Limitations of Distribution and Logistics Efficiency	4.35	0.15	3.35	0.50
6. Regulatory Uncertainty	4.30	0.15	3.30	0.49
7. Domestic Production Price Fluctuations	4.17	0.14	3.17	0.45
Opportunities	4.18	1.00	31.85	3.19
1. East Asia Market Opportunities	4.07	0.10	3.07	0.30
2. Middle East Market Opportunities	4.17	0.10	3.17	0.32
3. European and American Market Opportunities	3.89	0.09	2.91	0.27
4. Access Export Market Information	3.76	0.09	2.76	0.25
5. Increasing Demand for Poultry Meat	4.30	0.10	3.30	0.34
6. Government Policy or Program Support	4.26	0.10	3.26	0.33
7. Improvement of Facilities and Infrastructure	4.37	0.10	3.37	0.35
8. Increased Product Added Value	4.37	0.10	3.37	0.35
9. Implementation of Latest Technology	4.43	0.11	3.43	0.36
10. Access to the Latest Technology Information	4.20	0.10	3.20	0.32
Threats	4.37	1.00	30.30	-3.38
1. Tight Competition with Competitor Countries	4.50	0.11	3.50	0.40
2. Competition with Global Producer Countries (Brazil and Thailand)	4.50	0.11	3.50	0.40
3. Global Raw Material Price Fluctuations	4.46	0.11	3.46	0.39
4. Corn Price Affordability				
5. Change Standard Qualification Product	4.48	0.11	3.48	0.40
6. Global Animal Health Issues	4.33	0.11	3.33	0.37
7. Government policy	4.59	0.12	3.59	0.42
8. Improvement Request Product Poultry Organic	4.41	0.11	3.41	0.38
9. Agreement International Trade	3.76	0.10	2.76	0.26
	4.28	0.11	3.28	0.36

¹Processed Primary Data (2025)

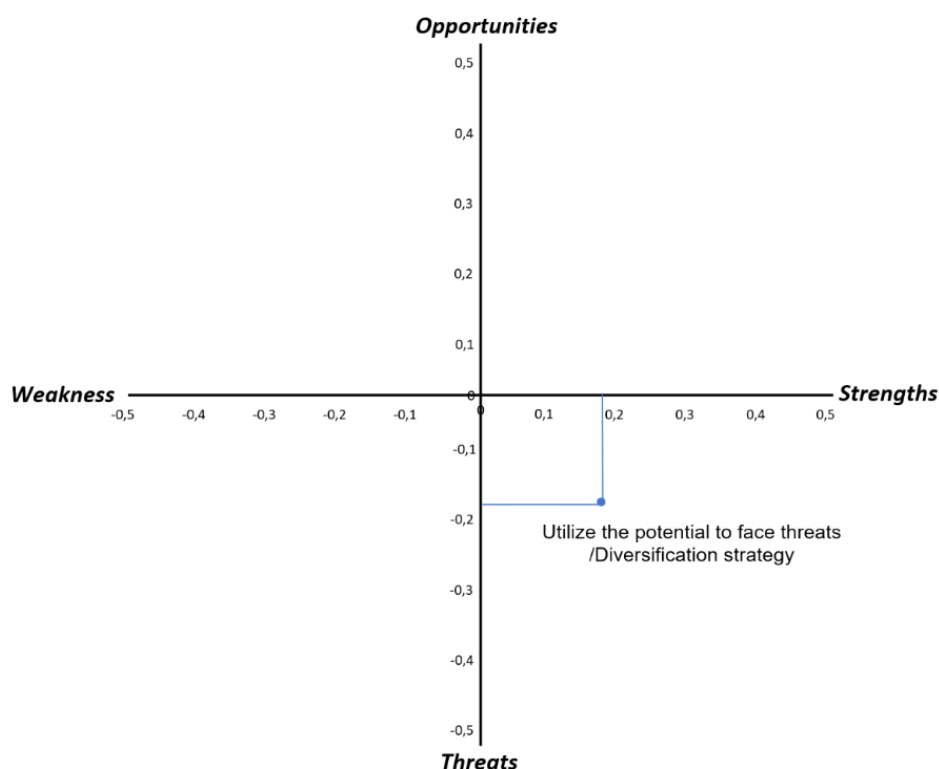


Figure 2. Cartesian Diagram of SWOT Analysis Recapitulation- Strategies to Enhance the Export Performance of Indonesian Chicken Products

competition from major poultry-producing countries such as Brazil and Thailand (4.50), and volatility in global feed prices (4.50), which represent significant obstacles (Cao *et al.*, 2021). Additionally, changes in product qualification standards (4.48) and concerns regarding global animal health can also impact the export performance of Indonesian chicken products.

Based on the SWOT analysis, it is determined that the most appropriate strategic position falls within Quadrant II (Figure 2), indicating the strategy that suitable for use is implementation of a diversification strategy in order to increase sales and revenue by adding new products and services and also entering new market segments (Suseno *et al.*, 2024). Successful diversification strategies usually mix new product ideas with entering new markets. These approaches help businesses become more flexible and better able to handle tough market conditions (Kurbatska *et al.*, 2021).

In this position, businesses face high market opportunities but still possess internal weaknesses in terms of competitiveness. The

most urgent issue is to address internal weaknesses to strengthen competitive capacity. This strategy emphasizes leveraging internal advantages to overcome external threats and consists of three main components: market diversification, product diversification, and technological and distribution diversification.

Market diversification involves expanding exports to non-traditional markets such as the Middle East and Africa while also enhancing competitiveness in existing markets through pricing strategies and branding.

Product diversification focuses on developing value-added broiler products that meet export standards, such as organic products, special healthy purpose (low cholesterol, diabetic, etc) and those that adhere to animal welfare principles.

Technological and distribution diversification entails adopting digital-based production and supply chain technologies to increase efficiency, as well as improving logistical infrastructure to reduce distribution and export costs.

By implementing this diversification strategy, Indonesia's chicken industry can be better prepared to face global challenges and enhance its competitiveness in international markets. Through the leveraging of internal strengths and optimization of available opportunities, the industry can expand its market share and increase its contribution to national economic development.

CONCLUSION

Based on the Gravity Model and Porter's Diamond analysis, economic, geographical, and policy-related factors are closely linked to the export competitiveness of chicken products. While internal factors such as food safety and hygiene standards, modern technology, and skilled labor serve as key strengths, several weaknesses remain, including reliance on imported raw materials and limited infrastructure. According to the SWOT analysis, a diversification strategy is strongly recommended to enhance export competitiveness.

RECOMMENDATION

Market diversification strategies can be implemented by developing value-added processed products, and adopting modern technologies in production and expanding into non-traditional markets. The application of digital technology in supply chain management and improvements in logistics infrastructure are also crucial for enhancing cost efficiency and enabling faster responses to market demand.

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