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How Competitive Is Malaysia's Agrifood Sector? Insights From a Cross-Country Comparison in ASEAN

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Abstract: Malaysia's food trade deficits have continued to widen over time, highlighting persistent challenges in agrifood competitiveness, particularly in reducing import dependence, improving productivity, and strengthening the country's ability to compete in both domestic and international food markets. Therefore, this paper assesses the competitiveness of Malaysia's agrifood sector relative to other ASEAN countries in the production and trade of four essential commodities: rice, beef, poultry, and fishery products. The comparison was made with Indonesia, Brunei, Thailand, Vietnam, Laos, Myanmar, the Philippines, and Cambodia. Singapore was excluded due to its status as a non-producing country. The study utilised time series data from 1992 to 2023, classified under the Harmonised System Code, obtained from the United Nations Commodity Trade Database and the Food and Agriculture Organisation. Competitiveness was estimated using Revealed Comparative Advantage (RCA), Relative Trade Advantage (RTA), and Revealed Symmetric Comparative Advantage (RSCA). Cambodia, Thailand, and Vietnam have a strong comparative advantage in rice production, while other ASEAN countries have a disadvantage. Laos and Myanmar exhibit a strong comparative advantage in beef production, whereas Thailand has a moderate advantage. Cambodia, Malaysia, Brunei, Indonesia, Vietnam, and the Philippines lack a comparative advantage in the beef sector. Malaysia stands out as the only ASEAN country that has shown a strong comparative advantage in poultry production, with no other nation developing a significant challenge to its position. Indonesia, the Philippines, Malaysia, Myanmar, and Brunei have strong comparative advantages in fisheries production. Thailand has a medium advantage, while Vietnam and Cambodia have low advantages, and Laos faces a disadvantage in the fisheries sector. Overall, Malaysia's competitiveness is confined to poultry throughout the study period, compared with the other eight ASEAN countries. The study is significant because it systematically assesses Malaysia's agrifood competitiveness relative to key ASEAN peers, thereby improving understanding of and addressing persistent food trade deficits.

Keywords: Agrifood; Competitiveness; ASEAN; Trade Performance Indices

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1. Introduction

Malaysia's agrifood trade deficit has been increasing over the years. For example, in 2020, Malaysia recorded approximately RM55.55 billion in food imports and RM33.8 billion in exports, resulting in a trade deficit of approximately RM21.7 billion. In 2022, the food trade deficit widened to RM31 billion, a 42.9% increase from 2020, and reached approximately RM41 billion in 2023 (DOSM, 2023).

From a trade perspective, improvements in the competitiveness of the agrifood sector can directly affect the structure of Malaysia's trade balance in food and agricultural products. A more competitive domestic agrifood sector is better positioned to substitute imported food, thereby narrowing the gap between food import expenditures and export receipts. Enhanced competitiveness also strengthens Malaysia's potential to diversify and expand its agricultural exports, enabling the country to generate foreign exchange earnings from internationally traded food products and to improve its position within global food value chains. These issues are mirrored in the broader Southeast Asian context, where varying levels of agrifood competitiveness influence trade balances among ASEAN countries.

This study, therefore, aims to examine the competitiveness of ASEAN countries in the agrifood industry for four critical commodities, which are rice, beef, poultry, and fishery products across nine ASEAN member nations: Malaysia, Indonesia, Brunei, Thailand, Vietnam, Laos, Myanmar, the Philippines, and Cambodia. Singapore, as a non-food-producing country, was omitted from the analysis. The analytical period, spanning from 1992 to 2023, encompasses over three decades marked by significant policy developments and structural transformations within the agrifood sector. By analysing long-term trends in Revealed Comparative Advantage, Relative Trade Advantage, and Revealed Symmetric Competitiveness indices for these commodities, this study contextualised the evolution of each country's comparative advantage amid regional integration processes and domestic policy shifts. The subsequent sections of this paper will outline the methodology for calculating these indices, present the empirical findings on the trade performance of each commodity, and discuss their implications for regional trade and food security strategies. Ultimately, a robust assessment of revealed competitiveness is imperative for informing future policy directions, enabling ASEAN member states and the wider region to capitalize on their competitive strengths in food production while concurrently addressing productivity gaps and trade performance challenges to foster sustainable agricultural development.

2. Literature Review

The concept of revealed comparative advantage (RCA) and its extended forms, Relative Trade Advantage (RTA) and Revealed Competitiveness (RC), have been widely applied in empirical trade studies to evaluate the competitiveness of agricultural and food commodities. Balassa (1965) introduced the RCA index to quantify a country's export performance in a particular product relative to the world average, laying the foundation for comparative trade analysis based on observed data. Subsequently, Vollrath (1991) advanced this framework by developing Relative Trade Advantage (RTA) and Revealed Symmetric Comparative Advantage (RSCA) to address the limitations of the original RCA, thereby allowing for a more nuanced understanding of both export and import performance.

In the context of ASEAN countries, several studies have used these indices to examine agri-food trade competitiveness. For instance, Mizik *et al.* (2020) assessed the export competitiveness of ASEAN agri-food products. They found that countries such as Thailand and Vietnam have consistently demonstrated strong comparative advantages in rice and fisheries exports. Their findings also suggested that, although Malaysia and Indonesia had some competitive strength in palm oil and fisheries products, their competitiveness in the livestock sector was weaker and more variable over time.

Focusing on specific commodities, Chandran and Sudarsan (2012) analysed fisheries trade between India and ASEAN using RCA and trade-complementarity indices. Their study identified Thailand and Indonesia as key competitors in the fish and seafood export market, owing to their resource endowments and expanding aquaculture industries. Similarly, Benalywa *et al.* (2018) used RCA to evaluate the competitiveness of Malaysia's broiler meat exports. While certain product lines (e.g., frozen whole chicken) showed competitive potential, the study revealed limited comparative advantage for most poultry products, suggesting inefficiencies in scale, production costs, and international marketing strategies.

Regarding rice, numerous studies have examined ASEAN's position in global trade. Thailand and Vietnam have long dominated international rice markets, with consistent RCA values above 2.0, underscoring their strong comparative advantage (Teng *et al.*, 2015). Conversely, the Philippines and Indonesia have historically exhibited low or negative RCA scores in rice, reflecting their reliance on imports due to production shortfalls and domestic consumption pressures (Delgado *et al.*, 2018). These trends persist despite policy interventions aimed at rice self-sufficiency, highlighting a persistent mismatch between policy goals and trade performance.

In the livestock sector, studies have noted challenges in achieving competitiveness in beef production. According to Warr (2014), beef production in Indonesia and the Philippines suffers from low productivity, poor feed efficiency, and fragmented value chains. These structural weaknesses are reflected in persistent negative RCA and RTA values, as imports dominate domestic beef markets. In contrast, Thailand has made progress in poultry exports

due to improved disease control and compliance with international food safety standards (Preechajarn & Qasmi, 2010), although its competitive edge fluctuates with shifts in global demand and trade restrictions.

Despite the insights provided by existing studies, several gaps remain in the literature. First, many studies analyse competitiveness using a single index (usually RCA), while fewer incorporate RTA and RC simultaneously to offer a comprehensive picture. Second, existing research often examines a limited time frame or focuses on a narrow set of commodities, leaving room for longitudinal, multi-commodity assessments across multiple countries. Third, while there is ample analysis on individual ASEAN member states, comparative cross-country evaluations (e.g., among Malaysia, Indonesia, Thailand, and the Philippines) using harmonised indicators remain limited.

Therefore, this study contributes to the literature by conducting a multi-country, multi-commodity competitiveness analysis over 32 years (1992–2023), incorporating RCA, RTA, and RSCA indicators for four critical agri-food commodities: rice, beef, poultry, and fisheries. Three decades of data were utilised to enhance the reliability and robustness of the descriptive analysis by providing a sufficiently long-time horizon to minimise the influence of short-term fluctuations and ensure that the observed dynamics of agrifood competitiveness reflect structural changes rather than random variation. By aligning trade performance with major policy shifts and structural transformations in the region, this research provides both methodological advancement and empirical insights relevant for trade and agricultural policy formulation in the ASEAN region

3. Materials and Methods

This study assesses the competitiveness of agrifood sector across the ASEAN nine (9) countries, Malaysia, Indonesia, Brunei, Thailand, Vietnam, Laos, Myanmar, the Philippines, and Cambodia, with a focus on four key commodities: rice, beef, poultry, and fisheries. The analysis employed three indices, Revealed Comparative Advantage (RCA), Relative Trade Advantage (RTA), and Revealed Symmetric Comparative Advantage (RSCA) for trade performance from 1992 to 2023, thus capturing the effects of significant policy shifts, including the implementation of the ASEAN Free Trade Area (AFTA) and the ASEAN Economic Community (AEC).

Trade data for the selected commodities were sourced from the United Nations Commodity Trade Database (UNComtrade) using the Harmonised System Codes shown in Table 1.

Table 1. Harmonised System Code Description

Food Sectors	HS Code Description
Rice	HS 1006 - Rice
Beef (Cattle)	HS 010221 – Cattle; live; pure-bred breeding animals
Poultry	HS 0105-Live poultry; fowls of the species
Fish	HS 0301 – Fish; Live

Source: UNComtrade Database, 2022

The study utilised 4-digit HS codes for rice, poultry, and fish, and 6-digit HS codes for beef (cattle), rather than broader aggregated categories, to ensure more precise classification of traded products in accordance with internationally recognised standards. This detailed coding approach enabled the analysis to more accurately align trade data with primary production activities in these sectors, thereby improving the relevance and specificity of the competitiveness assessment.

The competitiveness of food production was computed for each commodity and country annually over the study period. Trends and patterns were examined to identify shifts in competitiveness, and the results were contextualised within the framework of regional trade agreements and national policies. This provides a comprehensive assessment of the competitiveness of rice, beef, poultry, and fisheries among the nine ASEAN countries over the past 32 years by employing the methodological approaches as follows:

Revealed Comparative Advantage (RCA)**,** introduced by Balassa in 1965, measures a country's export performance of a specific commodity compared to the global performance of that commodity. It is calculated as follows:

$$B_{ij} = RCA_{ij} = \left(\frac{X_{ij}}{X_{it}}\right) / \left(\frac{X_{nj}}{X_{nt}}\right) \quad (1)$$

Where the variable X represents exports, *i* represents the country, *j* represents the commodity, *t* represents a set of commodities, and n represents a set of countries. When the RCA is greater than 1, the country is said to have a comparative advantage in the selected commodity, indicating a strong export sector and higher competitiveness (Latruffe, 2010). Conversely, an RCA below 1 indicates a comparative disadvantage in that sector (Mizik, 2021).

Relative Trade Advantage (RTA), proposed by Vollrath in 1991, accounts for both export and import activities, providing a measure of net trade advantage, which expresses the difference between the indices of Relative Export Advantage (RXA) and Relative Import Advantage (RMA):

$$RTA_{ij} = RXA_{ij} = RMA_{ij} \quad (2)$$

A positive RTA value indicates a comparative advantage, while a negative value indicates a lack of competitiveness, and a value of zero indicates marginal competitiveness.

Whereas RXA measures export (X) as:

$$\mathrm{RXA}_{ij} = \left(\mathrm{X}_{ij}/\mathrm{X}_{ik}\right) / \left(\mathrm{X}_{nj}/\mathrm{X}_{nk}\right), \text{ and} \quad (3)$$

RMA relating to imports is computed as:

$$\mathrm{RMA}_{ij} = \left(\mathrm{M}_{ij}/\mathrm{M}_{ik}\right)/\left(\mathrm{M}_{nj}/\mathrm{M}_{nk}\right) \quad (4)$$

where X represents exports, *k* denotes all commodities other than *j*, *n* denotes all countries other than *i*. Similarly, when RXA is greater than 1, the country has a comparative advantage, indicating that the selected sectors have a strong export advantage, revealing higher competitiveness.

Revealed Symmetric Comparative Advantage (RSCA) was introduced by Dalum *et al.* (1998). The purpose of adopting RSCA is to address an inherent risk of a lack of normality in Balassa's index. The advantage of using the RSCA index is that it provides an intrinsic benefit for a specific export commodity, aligning with variations in an economy's relative factor endowments and productivity (Nutjaree *et al.*, 2017). The RSCA normalizes the value of RCA, ranging from negative 1 (−1) to positive 1 (+1), and is free from skewness (Dalum *et al.*, 1998). The RSCA index gives the best measure of comparative advantage (Laursen, 2015), and it is calculated as follows (Dalum *et al.*, 1998; Laursen, 1998):

$$\mathrm{RSCA}_{ij} = \left(\mathrm{RCA}_{ij} - 1\right)/\left(\mathrm{RCA}_{ij} + 1\right) \quad (5)$$

Where i represents a country, *j* represents a given product, and *n* is the ASEAN nine (9) countries. A positive RSCA value indicates competitiveness in the commodity, whereas a negative value suggests a lack of competitiveness.

By applying the framework of Mizik (2021), the agrifood competitiveness is categorised as presented in Table 2.

Table 2. Categorization of Competitiveness based on RSCA indicator

Comparative Advantage	Indicator
Strong	More than 0.6 (RSCA > 0.6)
Medium	More than 0.33, less than 0.6 (0.33<RSCA<0.6)
Low	More than 0, less than 0.33 (0<RSCA<0.33)
No (Disadvantage)	More than -1, less than 0 (-1<RSCA<0)

Source: Mizik (2021)

4. Results and Discussions

This section presents findings on the competitiveness of the agrifood industry, specifically focusing on rice, beef, poultry, and fisheries, across nine ASEAN countries—Malaysia, Indonesia, Brunei, Thailand, Vietnam, Laos, Myanmar, the Philippines, and Cambodia, from 1992 to 2023. The analysis of the competitiveness of these food production sectors was conducted by examining the mean values of competitiveness indices for each country's performance.

4.1 Rice

Based on the mean values of Revealed Comparative Advantage (RCA), Relative Trade Advantage (RTA), and Revealed Symmetric Comparative Advantage (RSCA) for a period of 32 years (1992–2023), the rice production competitiveness in the ASEAN Nine countries is presented in Table 3.

Table 3. Rice Competitiveness by ASEAN Countries, 1992-2023

Countries	Mean Values			Competitiveness Rankings (RSCA)	Competitiveness Classification (RSCA)
	RCA	RTA	RSCA		
Malaysia	0.19	-13.5	-0.77	8th	No Comparative Advantage
Indonesia	0.32	-10.13	-0.76	7th	No Comparative Advantage
Thailand	14.18	13.87	0.87	1st	Strong Comparative Advantage
Philippines	0.06	-30.24	-0.90	9th	No Comparative Advantage
Brunei	1.65	-8.61	-0.51	6th	No Comparative Advantage
Vietnam	10.47	4.72	0.75	3rd	Strong Comparative Advantage
Myanmar	4.7	3.03	0.17	4th	Low Comparative Advantage
Cambodia	21.91	8.49	0.86	2nd	Strong Comparative Advantage
Laos	1.15	-1.48	-0.43	5th	No Comparative Advantage

The competitiveness of rice across ASEAN countries reveals a clear distinction between highly competitive exporters and countries facing significant challenges. Thailand, Cambodia, and Vietnam stand out as strong comparative advantages across all three metrics (RCA, RSCA, and RTA) in rice production. These countries are major players in the global rice trade, benefiting from efficient production and strong export capabilities. Myanmar exhibits a low comparative advantage.

Malaysia together with Laos, Indonesia, Brunei, and Philippines, however, do not possess a comparative advantage in rice. This indicates that these countries are generally uncompetitive in rice production and are net importers, relying on other countries to fulfil their domestic rice demand. Overall, the ASEAN rice market is characterised by a few dominant and highly competitive producers and a larger group of countries that struggle to

compete internationally, often due to factors such as domestic demand, production costs, or other market constraints.

4.2 Beef

The ASEAN region exhibits a significant disparity in beef production competitiveness, as shown in Table 4.

Table 4. Beef Competitiveness by ASEAN Countries, 1992-2023

Countries	Mean Values			Competitiveness Rankings (Mean RSCA)	Competitiveness Classification (Mean RSCA)
	RCA	RTA	RSCA		
Malaysia	1.37	-4.60	-0.59	4th	No Comparative Advantage
Indonesia	1.07	-20.28	-0.69	5th	No Comparative Advantage
Thailand	8.25	0.29	0.43	3rd	Medium Comparative Advantage
Philippines	0.85	-13.88	-0.84	7th	No Comparative Advantage
Vietnam	0.34	-5.00	-0.80	6th	No Comparative Advantage
Myanmar	0.03	767.47	0.70	2nd	Strong Comparative Advantage
Laos	690.18	674.54	0.93	1st	Strong Comparative Advantage

Laos is the most competitive nation, demonstrating strong comparative advantage, indicating a highly competitive and efficient, trade-oriented beef sector within the ASEAN Region. Other countries that demonstrate comparative advantage are Myanmar and Thailand. Myanmar presents a peculiar case, characterised by a strong RSCA and RTA, despite a very low RCA, which could indicate a highly efficient, albeit small-scale, export-oriented production. Malaysia, Indonesia, Philippines, and Vietnam exhibit no comparative advantage in beef production. Overall, the beef sector in ASEAN is characterised by a few highly competitive players, some with specialized advantages, and a majority facing significant challenges in establishing a strong comparative or trade advantage. Brunei and Cambodia were excluded from the analysis because they had insufficient observations in the dataset over the past 32 years.

4.3 Poultry

Poultry production competitiveness within ASEAN countries is widely diversified, as revealed in Table 5. Malaysia is the sole and dominant leader, exhibiting a strong comparative advantage. Other ASEAN countries exhibit no comparative advantage and a relative comparative trade disadvantage in the poultry sector.

Table 5. Poultry Competitiveness by ASEAN Countries, 1992-2023

Countries	Mean Values			Competitiveness Rankings (Mean RSCA)	Competitiveness Classification (Mean RSCA)
	RCA	RTA	RSCA		
Malaysia	116.29	111.64	0.98	1st	Strong Comparative Advantage
Indonesia	1.48	-1.58	-0.30	4th	No Comparative Advantage
Thailand	0.98	-9.68	-0.24	3rd	No Comparative Advantage
Philippines	1.97	-1.53	-0.17	2nd	No Comparative Advantage
Brunei	2.17	-3.23	-0.85	6th	No Comparative Advantage
Vietnam	0.03	-11.55	-0.94	7th	No Comparative Advantage
Myanmar	0.03	-28.26	-0.96	8th	No Comparative Advantage
Cambodia	0.05	-6.08	-0.96	9th	No Comparative Advantage
Laos	0.61	-14.65	-0.71	5th	No Comparative Advantage

Malaysia exhibits an exceptionally strong comparative advantage in poultry production, as evidenced by its very high RCA and RSCA values. The extremely high RTA further confirms its significant trade advantage, positioning Malaysia as a highly competitive and efficient producer and exporter in the poultry sector within the ASEAN region. This finding was supported by Benalywa *et al*. (2018), using the policy analysis matrix (PAM), that examined the comparative advantage of broiler production in Peninsular Malaysia in all scales of broiler production.

While Malaysia has successfully developed a highly competitive poultry industry, most other ASEAN nations struggle to establish a comparative advantage, often facing substantial trade deficits in this sector. This could be due to factors such as domestic production inefficiencies, high input costs, inadequate infrastructure, or intense competition from more efficient global producers, resulting in a reliance on imports to meet domestic demand.

4.4 Fisheries

The ASEAN region exhibits notable strength in fisheries production, with the majority of member countries displaying comparative advantage, as presented in Table 6. This pattern aligns with the region's geographic context, defined by extensive coastal areas and abundant marine resources. Malaysia ranked third in fishery aquaculture production within ASEAN, underscoring its significant role in the sector. Laos is the only country without a comparative advantage, as it is the sole landlocked nation in ASEAN.

Table 6. Fisheries Competitiveness by ASEAN Countries, 1992-2023

Countries	Mean Values			Competitiveness Rankings (Mean RSCA)	Competitiveness Classification (Mean RSCA)
	RCA	RTA	RSCA		
Malaysia	21.90	4.44	0.88	3rd	Strong Comparative Advantage
Indonesia	39.35	38.66	0.94	1st	Strong Comparative Advantage
Thailand	2.47	-2.44	0.41	6th	Medium Comparative Advantage
Philippines	29.18	26.40	0.91	2nd	Strong Comparative Advantage
Brunei	268.62	224.12	0.61	4th	Strong Comparative Advantage
Vietnam	2.09	-2.78	0.11	7th	Low Comparative Advantage
Myanmar	20.85	8.57	0.67	5th	Strong Comparative Advantage
Cambodia	34.46	-12.76	0.01	8th	Low Comparative Advantage
Laos	0.03	-0.81	-0.96	9th	No Comparative Advantage

Although Thailand, Vietnam and Cambodia exhibit a revealed slight export advantage in fish (RCA > 1), their revealed import advantage is slightly higher (RMA > RCA). This indicates that fish accounts for a relatively larger share of imports than of exports, relative to the ASEAN average. Consequently, the relative trade advantage (RTA) becomes negative, reflecting a small net trade disadvantage despite a strong RCA.

Within the comparative advantage, the competitiveness of fisheries production across ASEAN countries reveals a significant disparity. A clear group of highly competitive nations emerges, led by Indonesia, which exhibits strong comparative and trade advantages. Following closely are Philippines, Malaysia, and Myanmar, all of which demonstrate strong comparative advantages in both production and trade. Indonesia, Philippines, Malaysia, Brunei, and Myanmar are at the core of global fisheries competitiveness, possessing not only a strong productive capacity (high RCA and RSCA) but also a significant net export position (RTA > 1), benefiting from abundant marine resources, efficient production methods, and favourable trade policies.

Conversely, Laos stands at the other end of the spectrum, exhibiting no comparative advantage and a clear trade disadvantage, indicating its reliance on imports for fisheries products. Cambodia, Thailand, and Vietnam fall into an intermediate category. While Cambodia shows a strong RCA, its RSCA and RTA suggest weaknesses in its overall trade competitiveness. Thailand and Vietnam, despite having medium or low comparative advantages in production (RCA/RSCA), face relative trade disadvantages (negative RTA), implying that their domestic production might not be efficiently translated into export competitiveness, or they might be prioritising domestic consumption or facing trade barriers. This mixed performance highlights the complex interplay of production capabilities,

domestic demand, and international trade dynamics in determining a country's overall competitiveness in the fisheries sector.

5. Policy Implications

The analysis of competitiveness in the agrifood sector, focusing on rice, beef, poultry, and fisheries across Malaysia, Indonesia, Thailand, the Philippines, Brunei, Vietnam, Myanmar, Cambodia, and Laos, reveals a heterogeneous landscape of comparative advantages among these ASEAN nations. This varied performance reflects both structural differences in agricultural endowments and the evolving effects of regional trade integration, including initiatives such as the ASEAN Free Trade Area (AFTA), which aims to enhance competitive capacity through tariff reduction and market harmonisation. The results therefore carry important practical and policy implications for strengthening agricultural production systems, informing trade strategies, and advancing food security objectives within both regional and global markets.

5.1 Rice

Thailand, Cambodia and Vietnam demonstrate strong comparative advantages in rice production. Their high RCA and RTA values indicate efficient production and strong export capabilities. These countries should continue to leverage their strengths by focusing on expanding rice exports, exploring new markets, and investing in advanced agricultural technologies. Policies could support sustainable farming practices, enhance processing and value-addition capabilities, and promote research into high-yield, climate-resilient rice varieties. Strengthening trade agreements and reducing export barriers would further solidify their positions as major global rice suppliers.

Myanmar demonstrates a low comparative advantage, as indicated by RCA, RTA, and RSCA. Myanmar could focus on improving efficiency in its rice sector to capitalise on its production advantage and enhance trade competitiveness. This may involve modernising farming practices, enhance post-harvest handling, and improving market access. Policies could support farmer training, infrastructure development, and integration into regional supply chains.

Brunei and Laos exhibit some production capacity (RCA > 1), but display negative RTA and RSCA values, indicating a lack of no export competitiveness. These countries may prioritise domestic food security and self-sufficiency in rice production over large-scale exports. Policies could include incentives for local farmers, investment in local infrastructure for production and distribution, and potentially exploring niche markets for specific rice varieties. Reducing reliance on imports could be a key objective.

Malaysia, Indonesia, and the Philippines exhibit very low RCA values and significantly negative RTA and RSCA values, indicating a substantial lack of comparative advantage in rice production. These nations are net importers of rice. Their policies should focus on ensuring a stable and affordable rice supply for their populations, which may involve strategic import agreements and diversification of import sources. While domestic production can contribute to food security, significant investment to achieve export competitiveness might not be economically viable. Instead, they could focus on other agricultural sectors in which they possess stronger comparative advantages, or on improving the efficiency of their existing rice production to meet a portion of domestic demand.

5.2 Beef

Laos exhibits a strong comparative advantage in beef production, underpinned by its substantial cattle and buffalo populations and historical role as a supplier to neighbouring markets. To consolidate and leverage this competitive position, Laos should prioritise strategic actions to expand beef exports by identifying and penetrating high-demand markets, including China and Thailand, while aligning with international sanitary and phytosanitary (SPS) standards to enhance market access. Policy measures could focus on improving livestock genetics and breed performance, strengthening disease surveillance and veterinary services, and enhancing post-harvest processing and value-addition capabilities to increase product quality and export readiness. Additionally, fostering regional cooperation on trade facilitation and harmonised regulatory frameworks can help streamline cross-border commerce and ensure compliance with ASEAN and global requirements.

Myanmar and Thailand exhibit strong and medium comparative advantages, respectively, in beef production within the ASEAN context. Myanmar's relatively high RTA and RSCA values indicate robust export performance, reflecting the country's ability to leverage specific market access and trade relationships despite comparatively lower production efficiency as measured by RCA. Policies should be directed at diagnosing the structural factors underpinning export success and enhancing domestic production efficiency through investments in productivity enhancing technologies, extension services, and infrastructure that align production capacity with export potential. Thailand, with its established presence in the regional beef sector, should prioritise strategies that sustain and gradually improve its competitive position by promoting sustainable livestock management practices, improving feed and resource use efficiency, and developing differentiated or niche beef product markets that add value and deepen market penetration. Furthermore, both nations could benefit from intensified regional cooperation to harmonise animal health and sanitary standards, streamline cross-border trade procedures, and facilitate compliance with ASEAN and international regulatory frameworks, thereby reducing non-tariff barriers and enhancing market access for beef products.

Malaysia, Indonesia, the Philippines, and Vietnam generally exhibit no comparative advantage in beef production and trade, indicating that these countries are net importers of

beef and face structural challenges in competing internationally. ASEAN trade data show that these members account for a substantial share of regional beef imports, reflecting rising domestic demand and limited domestic supply relative to consumption growth. Given this context, policy priorities for these countries should emphasise ensuring a stable, affordable supply of beef for their populations through well-designed import strategies, including the negotiation of strategic import agreements, diversification of import sources, and effective use of regional and multilateral trade frameworks such as the ASEAN Free Trade Area (AFTA) and ASEAN Food Security Reserve Board (AFSRB) to secure favourable terms and reduce trade costs.

Investing heavily to achieve export competitiveness in beef may not be economically viable for these countries given current structural constraints; rather, they could improve the efficiency of existing production systems to satisfy a greater share of domestic demand and reduce import dependence. Additionally, targeting sectors in which they possess stronger comparative advantages such as poultry, rice, or aquaculture may yield higher economic returns. For countries with low RCAs in beef, policies that support local small-scale production for domestic consumption, including extension services, access to finance, and capacity building for farmers, could contribute to enhanced food security and bolster rural livelihoods without the burden of competing on global export markets.

5.3 Poultry

Malaysia, with exceptionally high RCA and a positive RSCA, demonstrates a very strong comparative advantage in poultry production. Malaysia should focus on sustaining and expanding its poultry industry. This could involve investing in advanced farming technologies, promoting export-oriented policies, and exploring new international markets. Policies supporting research and development in poultry genetics, feed efficiency, and disease control would further solidify its competitive edge. Trade agreements that reduce barriers for Malaysian poultry exports within and outside ASEAN would also be beneficial.

Brunei exhibits a positive RCA but negative RTA and RSCA, indicating potential for self-sufficiency, albeit limited export competitiveness. Brunei could focus on domestic market supply and food security. Policies might include incentives for local poultry farmers, improvements in local infrastructure for production and distribution, and the exploration of niche markets for high-value poultry products. Reducing reliance on imports could be a key objective.

Indonesia, Thailand, and the Philippines exhibit positive RCA values but negative RTA and RSCA values, indicating a lack of a strong comparative advantage in trade despite some production capacity. These countries should analyse the factors contributing to their negative RTA and RSCA. This could involve improving efficiency in production, processing, and logistics to lower costs. Investing in quality control and meeting international standards could enhance export potential. Policies aimed at reducing trade barriers, diversifying export

markets, and, where appropriate, focusing on specific poultry products in which they can gain an edge are crucial.

Vietnam, Myanmar, Cambodia, and Laos exhibit very low RCA values and significantly negative RTA and RSCA, indicating a substantial lack of comparative advantage in poultry production. These countries might need to reconsider their strategic focus on poultry production for export. Policies could prioritise improving domestic food security through efficient local production rather than aiming for large-scale exports. Investments might be better directed towards other agricultural sectors in which they possess a greater comparative advantage. If poultry production is deemed strategically important, significant long-term investments in infrastructure, technology, farmer training, and market access would be required to build competitiveness from the ground up.

5.4 Fisheries

Indonesia exhibits an exceptionally strong comparative advantage in fisheries production, with high RCA, RTA, RSCA values. She should capitalise on its dominant position by expanding its fisheries exports, exploring new markets, and investing in advanced aquaculture technologies. Policies could support sustainable fishing practices to maintain stock health, enhance processing capabilities to add value to products, and promote international collaboration to facilitate market access and technological exchange. Investment in research and development for marine biotechnology and sustainable resource management would further solidify its leadership.

Philippines, Malaysia, Brunei, and Myanmar demonstrate varying degrees of comparative advantage in fisheries production competitiveness. These countries should focus on optimising their fisheries sectors. Philippines and Malaysia must continue their efforts to foster export growth and potentially diversify their product offerings. They could strengthen their trade advantages by improving logistics, reducing trade barriers, and enhancing product quality to meet international standards.

Thailand and Vietnam exhibit low RCA values and negative RTAs, indicating challenges to export competitiveness, despite some production capabilities. These countries should critically evaluate their current fisheries strategies. While they have some production, their negative RTAs indicate that they are not effectively competing in international trade. Policies could focus on improving efficiency in their fishing fleets and aquaculture, enhancing processing technologies, and identifying niche markets in which they can gain a competitive advantage. Investment in value-added products and adherence to international sustainability certifications could help. Alternatively, they might consider reallocating resources to other agricultural sectors in which they possess a greater comparative advantage.

Cambodia, despite its high production (RCA), needs to address trade inefficiencies (negative RTA) through better market access, improved infrastructure, and potentially

regional trade agreements to realise its export potential. All these nations should prioritise sustainable resource management, combat illegal, unreported, and unregulated (IUU) fishing, and invest in the development of their coastal communities.

Laos exhibits a significant comparative disadvantage in fisheries production. Given its landlocked nature and low competitiveness, Laos should prioritise domestic food security and sustainable inland fisheries management over large-scale export-oriented production. Policies could include supporting small-scale, artisanal fisheries, promoting aquaculture for local consumption, and investing in the conservation of freshwater resources. Any efforts towards export would require substantial long-term investment and strategic partnerships, likely focusing on very specific, high-value freshwater products.

6. Conclusion

This study assessed the competitiveness of Malaysia's agrifood sector relative to other ASEAN countries, namely Indonesia, Thailand, the Philippines, Brunei, Vietnam, Myanmar, Cambodia, and Laos, with a focus on rice, beef, poultry, and fisheries products. Using the mean values of the Revealed Comparative Advantage (RCA), Relative Trade Advantage (RTA), and Revealed Symmetric Comparative Advantage (RSCA) indices, the analysis offers insights from a cross-country comparison within ASEAN.

The empirical analysis reveals that ASEAN exhibited marked competitiveness in agrifood production over the period 1992–2023, with Malaysia notably securing a comparative advantage in poultry production. In contrast, several member countries continue to face persistent structural constraints that impede competitive performance. These challenges, such as export under-development, unmanaged import dependence, and limited domestic beef production, highlight the need for context-sensitive policy interventions that not only enhance export capacities but also strengthen internal market orientation and self-sufficiency. The findings underscore the importance of tailoring agricultural and trade policies to national strengths and weaknesses to optimise sectoral outcomes and contribute to regional food security. Future research should further investigate the institutional and market determinants of competitiveness to inform more nuanced policy design across ASEAN economies.

The findings suggest that strengthening regional policy integration through ASEAN's food security frameworks can enhance competitiveness and mitigate structural disparities among member states. Policies should prioritise sustainable productivity growth and climate adaptation, strengthen domestic value chains to reduce import dependence, and expand investments in agricultural research and digital technologies. Moreover, aligning food security with nutrition and inclusive access objectives, while leveraging coordinated trade and market stability mechanisms, will be essential for resilient and competitive food systems

across ASEAN. Removing non-tariff barriers to intra-ASEAN food trade and creating an ASEAN Food Trade Network will facilitate price stabilisation in the ASEAN countries.

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