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Competitive Advantage between Malaysia and World Halal Producers of Ruminant Meat

ABSTRACT

The gap created by the mismatch between high domestic demand and low domestic supply of halal meat has been filled by ruminant meat sourced from the international markets. However, the exporting countries are still limited due to stringent halal requirements. This study examined the competitive advantage of trading partners in the exportation of ruminant meat. Moreover, this study also identified factors underlying the import of ruminant meat and determined the comparative advantage of local production of ruminant meat. This study employed Vollrath indices through the utilization of relative export advantage, relative import advantage, and overall relative trade advantage. Analysis was conducted on 26 countries and 15 product codes of ruminant meat. The findings disclosed that the possession of competitive advantage did not exclusively belong to traditional sources but to other countries, particularly Pakistan and the Netherlands.

Keywords: Halal; Ruminant meat; Revealed competitiveness; Malaysia

INTRODUCTION

The criticality of ruminant meat in Malaysia is primarily rooted in the mismatch between its demand and supply. Growing consumption, proven by the increased consumption per capita from 6.2 kg in 2012 to 6.7 kg in 2018, has been the leading cause of the incrased demand. However, the high demand is not commensurate with domestic production capacity. The state of domestic production is depicted by the decrease in production from 51,227 metric tonnes in 2012 to 46,333 in 2017 (Malaysia Competition Commission [MyCC], 2019) and the situation of self-sufficiency level, which has been relatively dormant, hovering at a level below 30% since 1990 (Mohamed, 2012; Yusoff, Ismail, & Kamarulzaman, 2020), even though the government has intervened with various production-related programs designed to double up the outputs. The programs include providing specific areas for ruminant production activities such as Permanent Food or Ruminant Production Parks, loaning out livestock to potential farmers, integrating farming to address the issue of land scarcity for cross-breeding to produce high-yield breeds, utilizing local resources in producing animal feeds,

and imposing border measures to ensure adequate supply of meat for domestic consumption (Mohamed, Hosseini, & Kamarulzaman, 2013). Those programs have allowed the ruminant sector to record positive growth. Unfortunately, the quantum of the growth has not been able to catch up with the quicker pace of the demand.

The dominant demand, triggered by the betterment in purchasing power, population expansion, socio-cultural practices, and urbanization changing lifestyles, has continuously surpassed domestic production. Ruminant meat sourced from the international markets has filled the mismatched gap. The low comparative advantage of local production, compounded with high domestic demand, has deepened Malaysia's dependency on international markets for the supply of ruminant meat, reflected in its balance of trade (Buda & Mohamed, 2021). Meat and its preparation have become one of the contributing factors to trade deficits. Therefore, the main objective of this study is to evaluate the overall exporters of ruminant meat, considering the opportunities offered by other exporting countries, including Malaysia's FTA partners and the major exporters of halal ruminant meat.

The exporting markets on which Malaysia relies are no longer typical since the halal requirements have become the most critical determinant in selecting exporters. Malaysia is known to have one of the strictest halal standards in the world. Hence, the halal requirements it imposes have been deemed by some ruminant meat exporters as technical barriers to trade, resulting in complaints being lodged at the WTO (Latif, Mohamed, Sharifuddin, Abdullah, & Ismail, 2014). Malaysia's strict halal requirements could be understood from the fact that it is a Muslim-majority country that depends on non-Muslim foreign countries for its food need due to the issue of comparative advantage. The concept of halal is highly embedded in the lives of Muslims, and the level of halal sensitivities and meticulousness in meat consumption is higher. The demand for halal has also been strengthened by the growing acceptance of non-Muslims of halal ruminant meat due to its quality assurance aspects (Kabir, 2015). Those mentioned factors have made the demand for halal ruminant meat significant.

Malaysia's trade performance is primarily measured based on its export competitiveness. Moreover, some research has highlighted imports as a dimension of competitiveness. Indeed, it will provide a more comprehensive picture of the country's competitiveness as both export and import are considered. Apart from that, imports, to some extent, reflect the country's domestic strength in particular sectors. The significance of this research is in the selected commodity analyzed. Halal ruminant meat is highly critical because it has been one of the major contributors to Malaysia's trade deficit for the past 20 years. It is also central to Malaysia as it carries an essential social connotation, especially to the Muslim community constituting almost 65% of Malaysia's overall population. The findings could, in some way, assist the government in diversifying the import sources and reducing its over-dependency on several countries. It would further cushion the country from any supply disruption, which various factors could cause.

To achieve the research objective, the revealed trade advantage (RTA) index was used to measure the competitive advantage. Market share performance has been regarded as a revelation of a country's comparative advantage and level of competitiveness. Kuldilok,

Dawson, & Lingard (2013) have suggested using a country's performance in market share as an indicator of competitiveness. Several studies have adopted the RTA index based on 'revealed competitiveness' in analyzing the revealed competitive advantage of various sectors of different countries. For example, Iranian's chicken meat competitiveness in the Middle East market (Mirzaei, Yazdani, & Mostafavi, 2006), Saudi Arabia's competitive position as one of the world's major exporters of palm date (El-Habba & Al-Mulhim, 2013), export fisheries performance of Balkan and Eastern European (Kaimakoudi, Polymeros, & Batzios, 2014), Thailand's tuna industry (Kuldilok et al., 2013), Italian's wines in the international market (Crescimanno & Galati, 2014), agro-food trade competitiveness for eight Central European and Balkan countries on the European Union (EU) markets (Bojnec & Fertő, 2017), the strength of China in the trade of agricultural products in the context of Belt and Road Initiative (Erokhin & Gao, 2018), Vietnam's agricultural trade specialization in the exportation of crop and fisheries (Hoang, 2019), and trade competitiveness of fish and seafood products among the RCEP member countries (Erokhin, Tianming, & Ivolga, 2021).

This study focuses on measuring competitiveness among ruminant meat suppliers, seeing Malaysia as highly dependent on several traditional exporters such as India, Australia, New Zealand, and Brazil for chilled and frozen ruminant meat, controlling almost 90% of its market share. For example, India has a strong position as one of the world's major agricultural exporters, specifically in unprocessed agricultural products such as rice, groundnut, fresh onion, fresh mango, and beef (Jain & Kannan, 2021). Assessing the competitiveness of Malaysia's meat sector vis a vis its competitors in the ASEAN markets using the Vollrath index or the RTA, the study unveiled that the ruminant sector was far behind the non-ruminant. The situation has been rooted in the factors of unavailability of good breeds, the exorbitant cost of quality ruminant feeds, and the absence of supportive fiscal policies (Bitrus et al., 2018; Bouwman, Van Der Hoek, Eickhout, & Soenario, 2005; Devendra, 2010; Garrett et al., 2017; Ismail, Abdullah, & Hassanpour, 2013; Ismail & Yusop, 2014).

RESEARCH METHOD

Annual trade data covering imports and exports from 2008 to 2017 from the COMTRADE were employed for analysis. The ruminant meat and its varieties are represented by a four-digit Harmonized Commodity Description and Coding System, known as HS Code: HS020110, HS020120, HS020130, HS020210, HS020220, HS020230, HS020410, HS020421, HS020422, HS020423, HS020430, HS020441, HS020442, HS020443, and HS020450.

This study involved 27 countries, comprising 18 of Malaysia's FTA partners and nine major halal meat exporting countries: Australia, Chile, China, India, Japan, Korea, New Zealand, Pakistan, Turkey, Brunei, Cambodia, Indonesia, Laos, Myanmar, the Philippines, Singapore, Thailand, Vietnam, Brazil, the USA, South Africa, the Netherlands, Kenya, Paraguay, Germany, Ethiopia, and Somalia (Farouk, 2013).

The Method: Revealed Competitiveness

The trade performance of a commodity could be utilized to gauge its competitive advantage as it would stimulate relative market costs (Bojnec & Fertő, 2017). Its trade performance was evaluated against its competitors over a certain period. In this regard, RTA was regarded as one of the suitable methods to measure the competitiveness of a country's particular commodity.

The indices offered by Vollrath (1991) have been associated with three specifications: (1) the revealed comparative export advantage (RXA) index, (2) the relative import advantage (RMA) index, and (3) the relative trade advantage (RTA) index. It is an improvement of Ballasa's equation addressing the issue of double counting, where the values of the country and commodity in question have been excluded in the calculation of RMA and RXA. The importance of intra-trade within an industry has been demonstrated using the net export instead of the gross export. Furthermore, the issue of asymmetric has also been rectified because an RTA value greater than zero indicates a relative trade advantage, while a value lesser than zero reflects a relative trade disadvantage. On the other hand, Balassa (1965) indicates that a value from zero to one denotes a competitive disadvantage, while a competitive advantage is when the value is between 1 to infinity. The RXA was calculated using formula 1.

$$RXA = \frac{X_{ij}/X_{it}}{X_{nj}/X_{nt}} \qquad (1)$$

Where, X indicates exports, i is the selected country, j signifies the ruminant meat (HS020110 to HS020450), t refers to the total number of agricultural products, and n represents all countries involved in this study, X_{ij} describes a country's exports of ruminant meat to the remaining countries in the group, while X_{it} denotes the country's total exports of agricultural products without the particular ruminant meat represented by j. X_{nj} indicates all countries' total exports, excluding country i. X_{nt} represents the total agricultural exports by all countries except i and the ruminant meat j. The issue of double counting was addressed through the exclusion of j (ruminant meat) from X_{nt} and X_{it}, and the exclusion of country i from X_{nt} and X_{nj} Vollrath, (1991) as adapted by Bojnec & Fertő, (2017).

The calculation of RMA was based on the following formula.

$$RMA = \frac{M_{ij}/M_{it}}{M_{nj}/M_{nt}} \qquad (2)$$

Where, M represents imports, i is the country in question, j implies the ruminant meat products t refers to the total number of agricultural products, and n signifies all countries selected for this study. M_{ij} indicates that the country imported; a specific ruminant meat j from other countries. M_{it}, on the other hand, reflects the country's imports of agricultural products except for the ruminant meat j. M_{nj} refers to the imports by all countries except country i. M_{nt} represents the total imports of agricultural products by all countries excluding the ruminant meat j and the country i. The double-counting issue was rectified by excluding the ruminant

meat j from M_{it} and M_{nt}, while the country i was excluded from M_{nj} and M_{nt} Vollrath, (1991) as adapted by Bojnec & Fertő, (2017).

Finally, *RTA* was derived from the difference between the *RXA* and *RMA*. Its values were considered exports and imports, as demonstrated by the following equation.

$$RTA=RXA-RMA \tag{3}$$

According to Vollrath, positive *RTA* values indicate a relative trade advantage, whereas negative *RTA* values imply a relative trade disadvantage.

RESULTS AND DISCUSSION

Export Specialization Advantage

The analysis of export specialization, as mentioned in Table 1, revealed that Australia, New Zealand, the Netherlands, Paraguay, India, Pakistan, Germany, the USA, Thailand, Malaysia, Cambodia, and Brunei possessed an export specialization advantage based on the RXA values greater than one. Those countries recorded at least one product code of export specialization advantage. A country's export specialization advantage is revealed when RXA >1 (Bojnec & Fertő, 2012). It is based on a country's exports of ruminant meat relative to its total agricultural exports and the corresponding export performance of a set of countries—the remaining 25 countries in the group.

If the comparison is made between the 13 countries with export specialization advantage, Australia, New Zealand, and the Netherlands are the most dominant since they possess more than five product codes of export specialization advantage. In this regard, Australia had the highest number of product codes that fit into the category of export specialization advantage. The total product codes analyzed in this study were 15, of which Australia had 14 tariff product codes with RXA values of greater than one.

In other words, Australia's competitiveness lay in the exportation of ruminant meat. It is also proof of Australia's dominance in the trade of ruminant meat based on the commanded export market share. Its specialization in exporting ruminant meat covered not only bovine but also lamb, sheep, and goat meat. Its specialization extended to every level of value addition and processing stage, from bone-in to boneless, fresh, or chilled to frozen. The most substantial export specialization advantage of Australia was recorded in the exportation of chilled or frozen goat meat. Chilled or fresh bovine was the only product code with an export specialization disadvantage.

New Zealand was another country with an impressive strength of export specialization advantage. It recorded 10 of 15 product codes having export specialization advantage based on the RXA value of greater than one. The analysis disclosed that the specialization of New Zealand significantly focused on the exportation of a selective small ruminant with specific processing stages.

TABLE 1. REVEALED EXPORT ADVANTAGE (RXA) AND REVEALED IMPORT ADVANTAGE (RMA)

HS CODE	AUSTRALIA		BRAZIL		BRUNEI		CAMBODIA		CHILE		CHINA		ETHIOPIA		GERMANY		INDIA		INDONESIA		JAPAN		LAOS		MALAYSIA	
	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA
20110	-	0.152	-	-	-	0.775	0.121	-	0.000	-	-	-	0.008	0.000	4.956	45.110	-	0.004	0.071	0.000	0.004	0.000	0.000	0.000	0.049	0.000
20120	0.003	3.200	0.001	0.002	0.411	-	0.037	-	0.825	0.226	0.043	-	0.012	-	3.824	11.192	-	0.004	0.037	0.000	0.094	0.001	0.393	0.000	0.099	0.001
20130	0.050	18.265	1.502	0.644	0.174	0.000	0.013	-	35.207	0.457	0.027	0.000	0.001	0.006	1.098	0.230	-	0.008	0.115	0.000	4.216	0.464	0.180	0.005	0.112	0.026
20210	0.419	4.820	-	-	0.699	-	18.374	40.474	0.000	0.205	0.555	-	0.345	-	0.194	0.000	-	0.967	6.311	0.002	0.000	0.095	0.000	0.000	4.760	1.031
20220	0.034	9.281	0.002	0.004	1.505	1.750	0.011	-	0.316	0.117	0.451	0.000	0.002	-	0.130	0.047	-	0.123	0.728	0.000	0.106	0.000	0.438	0.167	1.233	0.000
20230	0.044	14.235	0.342	0.399	1.136	0.001	0.020	0.003	1.135	0.105	0.399	0.004	0.003	-	0.172	0.195	-	8.116	1.285	0.000	1.529	0.448	0.017	0.009	2.155	0.022
20410	-	3.408	-	-	-	0.624	1.791	-	-	-	0.011	-	0.587	1.603	10.110	0.226	0.073	0.027	0.196	0.000	0.005	0.000	0.000	0.000	2.234	0.022
20421	-	38.119	-	-	0.311	-	15.185	-	-	-	0.069	-	0.001	-	0.161	0.198	0.005	2.786	0.091	0.005	0.009	0.000	0.000	0.000	-	0.000
20422	0.087	43.798	0.001	0.000	2.039	-	0.000	-	-	-	0.004	-	0.004	-	0.854	0.024	0.009	0.022	0.025	0.000	0.314	0.000	0.046	0.000	0.756	0.000
20423	0.117	21.604	0.001	-	0.623	-	0.012	-	-	-	0.001	-	0.001	0.000	2.469	0.032	0.000	0.497	0.021	0.000	2.137	0.000	0.026	0.000	0.229	0.001
20430	0.019	22.692	0.154	-	0.935	0.790	0.072	-	0.052	3.270	1.541	-	0.340	-	0.673	0.104	0.048	-	0.527	0.000	0.573	0.000	0.127	0.000	4.571	0.007
20441	-	10.773	0.016	0.001	0.603	-	0.006	-	-	0.234	1.243	0.006	-	-	0.001	0.003	-	0.026	0.458	0.000	0.194	0.000	0.000	0.001	13.046	0.000
20442	0.056	14.110	0.153	0.000	2.844	0.150	0.001	-	-	1.055	3.988	0.002	0.000	-	0.969	0.101	0.008	0.001	0.101	0.000	0.143	0.000	0.033	0.000	1.729	0.000
20443	0.144	21.716	0.022	-	0.822	0.006	0.030	-	-	0.640	0.214	0.020	0.002	-	3.994	0.294	0.003	0.004	0.159	0.000	1.006	0.000	0.000	0.000	1.583	0.001
20450	0.007	1,223.815	-	-	0.008	-	-	-	-	0.000	0.142	0.015	-	0.005	0.014	0.001	-	0.098	0.207	0.000	0.100	0.000	0.005	0.000	0.548	0.000

TABLE 1. CONTINUED

HS CODE	MYANMAR		THE NETHERLANDS		NEW ZEALAND		PAKISTAN		PARAGUAY		PHILIPPINES		REP KOREA		SINGAPORE		SOUTH AFRICA		THAILAND		TURKEY		USA		VIETNAM	
	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA	RMA	RXA
20110	0.000	0.000	19.450	3.851	0.008	0.001	0.025	0.515	0.000	0.000	0.001	0.000	0.000	0.000	0.005	0.005	0.000	0.008	0.000	0.017	0.221	0.000	0.000	0.085	0.003	0.000
20120	0.001	0.002	9.164	6.316	0.160	0.096	0.000	0.067	0.184	0.017	0.007	0.000	2.974	0.000	0.485	0.027	0.000	0.024	0.065	0.000	4.388	0.000	0.091	0.660	0.027	0.000
20130	0.000	0.000	0.896	1.409	0.496	0.861	0.001	0.005	0.056	18.252	0.001	0.000	1.700	0.000	0.671	0.011	0.002	0.111	0.104	0.000	0.000	0.000	0.741	1.362	0.066	0.000
20210	0.118	0.491	6.492	9.417	0.000	3.959	2.170	23.226	0.000	0.000	3.751	0.000	0.042	0.000	0.223	0.000	0.302	0.763	12.031	7.746	0.000	0.000	0.014	0.856	0.678	0.000
20220	0.017	0.056	0.117	0.071	0.106	5.080	0.002	0.106	0.000	0.099	0.644	0.001	57.726	0.526	0.586	0.513	0.484	0.946	0.093	0.014	0.141	0.000	0.035	5.724	0.138	0.000
20230	0.132	0.093	0.253	0.075	0.162	6.233	0.048	0.150	0.067	1.075	2.442	0.001	2.582	0.027	0.673	0.127	0.102	0.131	0.236	0.038	0.000	0.000	3.166	0.635	0.399	0.003
20410	0.019	0.000	1.975	88.280	0.000	0.077	0.000	0.506	0.000	0.000	0.226	0.000	0.026	0.000	14.050	0.056	0.000	0.031	0.115	0.000	0.000	0.000	0.041	0.019	0.020	0.000
20421	0.000	0.000	0.000	166.651	0.372	14.757	0.000	7.669	0.000	0.000	0.000	0.000	0.000	0.000	-	0.017	0.000	0.092	0.137	0.000	0.000	0.000	0.257	0.026	0.005	0.000
20422	0.000	0.000	0.578	0.064	0.194	14.543	0.009	0.000	0.000	0.000	0.002	0.000	0.196	0.000	0.612	0.009	0.026	0.003	0.276	0.000	0.000	0.000	19.056	0.001	0.051	0.000
20423	0.001	0.000	0.975	0.185	0.038	26.575	0.000	0.428	0.000	0.000	0.003	0.000	0.021	0.000	0.538	0.020	0.004	0.006	0.051	0.001	0.000	0.000	4.500	0.002	0.022	0.000
20430	0.110	0.000	0.141	0.070	0.000	28.470	0.061	0.475	0.000	0.000	1.071	0.000	0.043	0.000	1.378	0.178	0.126	0.004	0.086	0.000	0.000	0.000	6.250	0.068	0.030	0.000
20441	0.000	0.000	0.001	0.007	0.976	73.648	0.000	0.031	0.000	0.000	0.043	0.000	0.073	0.000	8.913	0.023	0.048	0.000	0.002	0.000	0.000	0.000	2.291	0.003	0.020	0.000
20442	0.000	0.000	0.528	0.092	0.398	42.391	0.000	0.000	0.000	0.000	0.098	0.000	0.348	0.000	0.697	0.034	1.702	0.143	0.198	0.000	0.000	0.000	2.007	0.011	0.084	0.000
20443	0.002	0.000	1.559	0.369	1.037	25.198	0.001	0.000	0.000	0.000	0.080	0.000	0.634	0.000	2.174	0.072	0.782	0.013	0.186	0.000	0.000	0.000	1.575	0.012	0.059	0.000
20450	0.000	0.345	0.001	0.007	0.012	0.403	0.026	0.118	0.000	0.000	0.008	0.000	0.941	0.000	0.093	0.000	0.001	0.002	0.007	0.000	0.000	0.000	40.050	0.009	1.155	0.005

New Zealand had a strong export specialization advantage on chilled or fresh and frozen sheep. However, it was not the case with lamb, as its export specialization advantage only covered frozen lamb and not chilled or fresh ones. New Zealand had no export specialization advantage on chilled or fresh and frozen goat meat. Amongst its product codes registered export specialization advantages, its greatest strength was the exportation of frozen sheep carcasses.

The analysis results unveiled that bovine was not New Zealand's forte. Its specialization was not in exporting bovine. It could be seen from the product codes with export specialization disadvantage, primarily made up of bovine and its related products. The product codes included chilled or fresh bovine carcasses, chilled or fresh bovine cuts bone-in, and chilled or fresh bovine cuts boneless.

Apart from Australia and New Zealand, another country with extensive export specialization advantage was the Netherlands, with six product codes having RXA values of more than one. The Netherlands' specialization encompassed solely bovine and sheep, not goat meat. In the exportation of bovine, its focus was concentrated on chilled or fresh bovine carcasses, frozen bovine carcasses, chilled or fresh bovine cuts bone-in, and chilled or fresh bovine cuts boneless. As for the small ruminant, its specialization lay in chilled or fresh lamb carcasses and chilled or fresh sheep carcasses. On the whole, the exportation of chilled or fresh sheep carcasses was Netherlands' major strength.

It is interesting to note that Malaysia's principal supplier of ruminant meat, India, had only two product codes of export specialization advantages: boneless frozen bovine cuts and chilled or fresh sheep carcasses. A cross-country comparison revealed that India was not the most highly specialized country exporting those two commodities. In the product category of frozen bovine cuts boneless, Australia was in a better position than India, as indicated by the value of RXA. India was the second after Australia, followed by New Zealand and Paraguay as countries with recorded export specialization advantage in that particular product category.

As for Pakistan, its export specialization advantage was concentrated on frozen bovine carcasses and chilled or fresh sheep carcasses. Its export specialization advantage on frozen bovine carcasses was impressive, as it was ranked second after Cambodia. Cambodia was the most specialized country, leading the pack of other countries of the same category, including Pakistan, the Netherlands, Thailand, Australia, New Zealand, and Malaysia.

The only Malaysia's product code recording the export specialization advantage was frozen bovine carcasses. The exportation of frozen bovine carcasses was basically to meet the demand from the neighboring states, particularly Singapore and Brunei. It is important to note that Malaysia has not been a principal supplier of this good to those countries. Its role is to cover the minimal deficit of supply experienced by Singapore and Brunei. Amongst the countries that have recorded the export specialization advantage for the same product code, Malaysia was the least specialized. In this regard, this export specialization advantage must be analyzed by importing the same product code to acquire a comprehensive overview of trade specialization.

Germany, Paraguay, the USA, and Chile recorded two product codes with the export specialization advantage. The products included chilled or fresh bovine carcasses, chilled or fresh bovine cuts bone-in, chilled or fresh bovine cuts boneless, frozen bovine cuts boneless, frozen bovine cuts bone-in frozen lamb carcasses, and frozen sheep cuts bone-in. On the other hand, Brunei and Ethiopia specialized in exporting frozen bovine cuts bone-in and chilled or fresh lamb carcasses, respectively. Moreover, Brazil, China, Indonesia, Japan, Lao, Myanmar, the Philippines, the Republic of Korea, Singapore, South Africa, and Turkey had no export specialization advantage.

From the analysis of export specialization advantage, it is interesting to note that Malaysia's non-traditional partners in the trade of ruminant meat, such as Cambodia, Pakistan, and Thailand, possessed a substantial export specialization advantage. Those countries have signed FTA agreements with Malaysia. Cambodia and Thailand are together with Malaysia in ASEAN Trade in Goods Agreement (ATIGA), while Pakistan is Malaysia's partner in the Malaysia-Pakistan Closer Economic Partnership Agreement (Ministry of International Trade and Industry Malaysia, 2018).

Regarding halal certification requirements, Pakistan has possessed two halal certification bodies recognized by JAKIM. Matters related to halal in Thailand have been supervised by the Central Islamic Council of Thailand (CICOT), and JAKIM has also accredited its halal certification. On the other hand, Cambodia has utilized a halal certification body from a Vietnam-based halal certification body, Vietnam-Halal Certification Agency Vietnam (HCA), which has also received endorsement from JAKIM (Secretariat Malaysia Halal Council, 2019). In other words, those countries have fulfilled the primary prerequisite of market access in the trade of ruminant meat required by Malaysia.

The short physical distance connecting these countries with Malaysia was another beneficial factor. Shorter distances not only reduce transportation time, crucial for the perishable item to maintain its quality, but also reduce the overall operational costs due to lower freight costs (Kaitibie, Haq, & Rakotoarisoa, 2017). The materialization of the Pan-Asia railway project will further fertilize the trade in the region as countries have options on whether to prefer sea or land freight depending on the cost factor (Oh, 2018). These merits are worth Malaysia's consideration in its effort to diversify its import sources, as over-dependency has been proven to be unhealthy, considering the occurrence of supply vulnerabilities resulting from various kinds of shocks.

Import Specialization Advantage

The country's import specialization advantage is revealed when RMA < 1. When RMA > 1, countries are said to have an import specialization disadvantage (Bojnec & Fertő, 2012). Import specialization advantage or disadvantage is based on a country's imports of ruminant meat relative to its total agricultural imports and the corresponding import performance of a set of countries—the remaining 25 countries in the group. Those indicators demonstrate the level of the country's import dependency. Countries are said to have low import dependency

when they have an import specialization advantage. It is contrary to import specialization disadvantage as it associates countries with high import dependency.

As Table 1 displays, the countries analyzed in this study depicted various levels of import dependency. In general, most countries could be categorized as having an import specialization advantage, which could be construed as low import dependency for the supply of ruminant meat. It is derived from the fact that the number of product codes with ratio values of lesser than one (RMA < 1) outnumbered the product codes with ratio values of greater than one (RMA > 1). Well-known ruminant meat producers like Australia, New Zealand, India, and Paraguay demonstrated that their import dependency was less significant than their exports. Their minimal dependency on imports could be seen from the fact that none of their product codes recorded an RMA value greater than one. The same goes for Brazil and Pakistan, the other world's major ruminant meat producers, with only one product code recorded as an import specialization disadvantage.

In the case of Australia and New Zealand, imports have become a seasonal matter and complimentary, not the primary supply line. New Zealand imported from Australia for domestic needs in case of a domestic supply shortage. Australia has become the selected exporter due to its geographical proximity, particularly the distance, and comparable biosecurity requirements emphasizing traceability and green and clean production systems (Tucker, 2018). The domestic supply shortage typically occurs when there is a surge in demand by the importing countries, reaching up to 95% of their total meat production. The enticement of higher prices from the importing countries could lead to under-supply at home. New Zealand's ruminant meat was highly pursued due to its premium status rooted in its production system, primarily based on grass-fed as opposed to most of the rest of the world, grain-fed. Unsuitable pasture conditions caused by prolonged dry weather, which would negatively affect production, have become another factor leading to imports.

Australia's imports were relatively low and not as significant as its exports. Imports were seasonally utilized in the event of domestic shortage, usually caused by strong demand from the importing countries and long dry spells deteriorating its pastoral area. Unlike its neighbour-New Zealand, depending on pastoralism, Australia's ruminant sector has grain-fed and pasture-fed ruminants (Garrett et al., 2017; MacLeod & Moller, 2006). In some cases, imports were also utilized as a feeder to their food processing industries. Its import sources were concentrated amongst a few selected countries, such as New Zealand, the US, Japan, and the Netherlands. Production-wise, Australia was incomparable with major producers, particularly Brazil, India, and the US. However, the fact that Australia could export almost 70% of its production has made it one of the world's major exporters of ruminant meat.

A similar demand and supply pattern could be discovered in New Zealand and Australia, where domestic production was meant mainly for exports while domestic consumption was met through imports. This pattern is not exclusive to the two countries and is also not confined to ruminant meat per se. It is quite a common practice for exporting countries to prioritize the export markets compared to their domestic market (MacLeod & Moller, 2006; Robertson, 2010). The profitability factors have driven it, and the tide could

change depending on the same factor. The margins and profits determined the flow of goods. Aggregately, the revenue derived from the export should be able to offset and shoulder the costs of imports.

As for India, the importation of beef has been strictly prohibited on the ground of religious sensitivities. As such, no data on the importation of beef was recorded (Liu & Iqbal, 2016). The only available data were on the importation of lamb and sheep meat, but the volume and value were not big enough to be considered an import specialization disadvantage. In other words, India's limited imports of ruminant meat were confined to lamb and sheep meat, and no importation of beef was made due to the consumption restriction. This unique situation has freed India from being reliant on imports as far as ruminant meat is concerned.

Paraguay was another country with all 15 product codes recorded with RMA values smaller than one, denoting its low import dependency. It is crucial to note that Paraguay has become one of the world's primary meat-producing countries, and its consumption per capita of beef has been amongst the highest in the world. The low import dependency was attributed to the fact that halal meat was not highly demanded in Paraguay. It is not a Muslim-majority country, with a Muslim population of less than 1%. Moreover, most of the countries analyzed in this study were not Paraguay's traditional trade partners except Brazil, the USA, and Chile, located in the same region as Paraguay.

Pakistan, Brazil, South Africa, and Turkey also recorded the absence of import specialization disadvantage. Those countries had only one product code recorded an RMA value of greater than one, indicating an import specialization disadvantage. The only import specialization disadvantage recorded by Pakistan was in frozen bovine carcasses, while Brazil was in chilled or fresh bovine cuts boneless. South Africa, on the other hand, had recorded import specialization disadvantage in frozen sheep cuts, bone-in, and Turkey's dependency on import lay in chilled or fresh bovine cuts bone-in. This situation is evidence of the low import reliance of these countries rooted mainly in the ability of their domestic production to meet the demand, especially in Pakistan and Turkey. As for Brazil and South Africa, halal meat was not in high demand due to low consumption, as the Muslim population only constituted around 2% of their overall population. The demand from this population could be easily satisfied by domestic production. Paraguay and Chile also shared a similar situation, as explained earlier.

A low preference for ruminant meat due to the availability of more affordable alternatives such as poultry was another factor explaining the low import dependency, as indicated by the RMA values. The consumption per capita of beef and lamb or sheep meat depicted the same pattern. This explanation has been confirmed for Muslim-minority countries like Cambodia, Laos, Myanmar, and Vietnam, where producing halal ruminant meat was not their economic forte. Moreover, Australia, New Zealand, Brazil, and India are countries with Muslim minorities, but they have become the producers and exporters of halal ruminant meat.

Malaysia and the USA recorded more product codes with import specialization disadvantages than those with import specialization advantages, illustrating their high import

dependency. The USA's ruminant sector has been primarily concentrated in beef production, making it one of the world's major producers. However, its involvement in small ruminants was not as intensive as the beef production industry. Demand for the small ruminants—lamb and sheep meats—was satisfied through imports. It has been manifested by the product codes with recorded import specialization disadvantages covering all types of lamb, sheep, and goat meat with all types of processing levels.

Malaysia's reliance was evident for these particular product codes: frozen sheep carcasses, frozen bovine carcasses, and frozen lamb carcasses. The results conform with the findings of various studies highlighting Malaysia's strong import reliance. It is also in tune with Malaysia's balance of trade statistics, highlighting the import of ruminant meat as one of the contributing factors to the deficit in agro-food trade (Tey et al., 2016). It is not new, as the same pattern has existed since the early 1980s when industrialization and industrial commodities were prioritized over agro-food commodities. It has caused the shift of resources toward the promoted sector, leaving the agro-food sector, including the ruminant sub-sector, to assume the secondary role. Over time, the situation has triggered the deterioration of competitiveness and efficiency of the sector and adversely affected its ability to meet domestic demand.

Revealed Trade Advantage (RTA)

Positive values of RTA indicate a competitive trade advantage, while negative values of RTA represent a competitive trade disadvantage. The calculated RTA values are displayed in Table 2, and it is apparent that Australia has become the most competitive country in the ruminant meat trade. Australia recorded no negative values of RTA for the all-tariff lines, and its RTA was quite substantial, where 14 out of 15 tariff lines reached values greater than one. Other countries recording impressive competitive trade advantages were New Zealand and Pakistan. They had only two out of 15 tariff lines with negative values of RTA. New Zealand's ruminant sector focused mainly on small ruminants, where it enjoyed a strong competitive advantage. However, it was different with bovine, of which the relative trade disadvantage was reflected in chilled or fresh bovine carcasses and chilled or fresh bovine cuts bone-in. As for Pakistan, its strength lay in exporting frozen bovine carcasses and chilled or fresh sheep carcasses, while its relative trade disadvantage was on chilled or fresh sheep cuts bone-in and frozen sheep cuts boneless.

The fact that Pakistan and Indonesia are Muslim countries has become another positive factor promoting bilateral trade on ruminant meat. Moreover, the halal certification for ruminant meat issued by the two countries has been recognized and endorsed by JAKIM. As of 2019, JAKIM recognized three halal certification bodies from the two countries: The Indonesian Council of Ulama, Jamea Markaz Uloom Islamia Mansoora, and Punjab Halal Development Agency of Pakistan(Secretariat Malaysia Halal Council, 2019). In other words, exporters having the halal certification issued by the recognized halal certification bodies are allowed to export to Malaysia (Noordin, Noor, & Samicho, 2014). In this case, common religion could act as a trade-promoting factor in strengthening the bilateral flows of trade, as

TABLE 2. REVEALED TRADE ADVANTAGE (RTA)

HS CODE	AUSTRALIA	BRAZIL	BRUNEI	CAMBODIA	CHILE	CHINA	ETHIOPIA	GERMANY	INDIA	INDONESIA	JAPAN	LAOS	MALAYSIA
20110	0.152	-	0.775	(0.121)	(0.000)	-	(0.008)	40.154	0.004	(0.071)	(0.004)	-	(0.048)
20120	3.196	0.001	(0.411)	(0.037)	(0.600)	(0.043)	(0.012)	7.368	0.004	(0.037)	(0.093)	(0.393)	(0.099)
20130	18.215	(0.858)	(0.174)	(0.013)	(34.750)	(0.027)	0.005	(0.868)	0.008	(0.115)	(3.752)	(0.175)	(0.087)
20210	4.402	-	(0.699)	22.100	0.205	(0.555)	(0.345)	(0.194)	0.967	(6.309)	0.095	-	(3.729)
20220	9.247	0.002	0.245	(0.011)	(0.198)	(0.451)	(0.002)	(0.084)	0.123	(0.728)	(0.106)	(0.272)	(1.233)
20230	14.190	0.057	(1.135)	(0.017)	(1.030)	(0.395)	(0.003)	0.023	8.116	(1.285)	(1.081)	(0.007)	(2.133)
20410	3.408	-	0.624	(1.791)	-	(0.011)	1.016	(9.884)	(0.046)	(0.196)	(0.005)	-	(2.212)
20421	38.119	-	(0.311)	(15.185)	-	(0.069)	(0.001)	0.037	2.781	(0.086)	(0.009)	-	-
20422	43.711	(0.001)	(2.039)	(0.000)	-	(0.004)	(0.004)	(0.830)	0.013	(0.025)	(0.314)	(0.046)	(0.756)
20423	21.488	(0.001)	(0.623)	(0.012)	-	(0.001)	(0.001)	(2.438)	0.497	(0.021)	(2.137)	(0.026)	(0.229)
20430	22.673	(0.154)	(0.146)	(0.072)	3.218	(1.541)	(0.340)	(0.569)	(0.048)	(0.527)	(0.573)	(0.127)	(4.563)
20441	10.773	(0.016)	(0.603)	(0.006)	0.234	(1.237)	-	0.002	0.026	(0.458)	(0.194)	-	(13.046)
20442	14.054	(0.153)	(2.694)	(0.001)	1.055	(3.987)	(0.000)	(0.868)	(0.007)	(0.101)	(0.143)	(0.033)	(1.729)
20443	21.572	(0.022)	(0.816)	(0.030)	0.640	(0.195)	(0.002)	(3.700)	0.001	(0.159)	(1.006)	-	(1.582)
20450	1,223.809	-	(0.008)	-	0.000	(0.127)	0.005	(0.012)	0.098	(0.207)	(0.100)	(0.005)	(0.548)

TABLE 2. CONTINUED

HS CODE	MYANMAR	THE NETHERLANDS	NEW ZEALAND	PAKISTAN	PARAGUAY	THE PHILIPPINES	REP KOREA	SINGAPORE	SOUTH AFRICA	THAILAND	TURKEY	USA	VIETNAM
20110	-	(15.599)	(0.007)	0.490	-	(0.001)	(0.000)	0.000	0.008	0.017	(0.221)	0.085	(0.003)
20120	0.001	(2.848)	(0.063)	0.067	(0.168)	(0.007)	(2.974)	(0.458)	0.024	(0.065)	(4.388)	0.569	(0.027)
20130	(0.000)	0.513	0.365	0.004	18.196	(0.001)	(1.700)	(0.660)	0.108	(0.103)	-	0.621	(0.066)
20210	0.373	2.925	3.959	21.056	-	(3.751)	(0.042)	(0.223)	0.461	(4.286)	-	0.842	(0.678)
20220	0.038	(0.046)	4.974	0.104	0.099	(0.644)	(57.200)	(0.074)	0.461	(0.078)	(0.141)	5.689	(0.138)
20230	(0.039)	(0.178)	6.071	0.102	1.008	(2.440)	(2.555)	(0.546)	0.029	(0.198)	-	(2.530)	(0.396)
20410	(0.019)	86.306	0.077	0.506	-	(0.226)	(0.026)	(13.994)	0.031	(0.115)	-	(0.022)	(0.020)
20421	-	166.651	14.385	7.669	-	(0.000)	-	-	0.092	(0.137)	-	(0.231)	(0.005)
20422	-	(0.513)	14.349	(0.009)	-	(0.002)	(0.196)	(0.603)	(0.023)	(0.276)	-	(19.055)	(0.051)
20423	(0.001)	(0.789)	26.537	0.428	-	(0.003)	(0.021)	(0.518)	0.002	(0.050)	-	(4.498)	(0.022)
20430	(0.110)	(0.070)	28.470	0.415	-	(1.071)	(0.043)	(1.199)	(0.121)	(0.086)	-	(6.183)	(0.030)
20441	-	0.005	72.672	0.031	-	(0.043)	(0.073)	(8.890)	(0.048)	(0.002)	-	(2.288)	(0.020)
20442	-	(0.435)	41.993	0.000	-	(0.098)	(0.348)	(0.662)	(1.560)	(0.198)	-	(1.997)	(0.084)
20443	(0.002)	(1.190)	24.161	(0.001)	-	(0.080)	(0.633)	2.102	(0.769)	(0.185)	-	(1.564)	(0.059)
20450	0.345	0.006	0.391	0.092	-	(0.008)	(0.941)	(0.093)	0.001	(0.007)	-	(40.041)	(1.150)

suggested by studies on the issue of cultural similarities between countries (Hergueux, 2011; Lankhuizen & de Groot, 2016; Mehchy, Nasser, & Schiffbauer, 2015; Selmier & Oh, 2013).

India's position as one of the world's prominent producers of ruminant meat was proven since the majority of its tariff lines, 13 out of 15, have constituted competitive trade advantages. Moreover, its position as one of the world's prominent exporters of ruminant meat was also proven since most of its tariff lines, 12 out of 15, recorded relative trade advantages. India's most outstanding relative trade advantage was recorded for its main export item, frozen bovine cuts boneless. Chilled or fresh lamb carcasses, frozen lamb carcasses, and frozen sheep cuts bone-in were the three tariff lines with relative trade disadvantages.

South Africa demonstrated that its ruminant sector was relatively competitive and enjoyed relative trade advantages for most of its tariff lines; 10 out of 15 had positive RTA values. However, the positive values exhibited by those tariff lines were relatively low for having values of less than one. Even though the Netherlands had only six tariff lines with relative trade advantages, the strength of its tariff lines with positive RTA was quite impressive, especially for chilled or fresh lamb carcasses, chilled or fresh sheep carcasses, and frozen bovine carcasses. Those mentioned items recorded positive values of greater than one.

Malaysia, the Philippines, China, Indonesia, Japan, the Republic of Korea, Laos, Singapore, Thailand, and Vietnam were considered uncompetitive in producing ruminant meat. Malaysia has become one of the most uncompetitive countries of all 15 tariff lines of ruminant meat, all depicted negative values, and eight reached less than 1. Those products included frozen carcasses or half-carcasses of sheep (excl. lamb), frozen carcasses or half-carcasses of lamb, frozen carcasses or half-carcasses of bovine animals, fresh or chilled carcasses or half-carcasses of lamb, and boneless frozen meat of bovine animals.

The same goes for China, Indonesia, the Philippines, the Republic of Korea, Laos, and Vietnam, where all products recorded negative values. Whereas for Japan, Singapore, and Thailand, 14 products recorded negative values.

CONCLUSION

The analysis revealed that the traditional markets that Malaysia has been highly dependent upon, particularly Australia, New Zealand, and India, were the most competitive exporting countries amongst the halal exporting countries. In line with import diversification strategies meant to reduce over-reliance on particular markets, non-traditional exporting countries like Pakistan, South Africa, the Netherlands, and Chile were worth considering based on their strong RTA. Malaysia's condition of not having positive RTA for all tariff lines added to the importance of import diversification to cushion any form of shocks not only confined to economic factors and the outbreak of diseases. The suitability of candidates was entirely determined by their ability to fulfill the criteria of Malaysia's halal requirements.

Malaysia's unsatisfactory level of domestic production has caused a significant dependency on imported markets. Dependency on several countries would expose Malaysia to shocks that could disrupt supply. The situation highlights the importance of having import diversification strategies to provide a cushion against future shocks, which could be originated

not only from economic factors but also from non-economic ones, such as pandemics. In this regard, Malaysia should begin evaluating the ability of the non-traditional countries as an alternative source for its imports of ruminant meat. Countries that have met all the determinant criteria, particularly the halal aspects, should be considered, as it has been proven that recognized halal certification is the primary prerequisite in determining imports.

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