Prospects and strategies for food exports from border areas: a case of West Kalimantan Province, Indonesia

E Ariningsih*, S H Susilowati, H P Saliem and A Agustian

Indonesia Center for Agricultural Socio Economic and Policy Studies, Jln. Tentara Pelajar No. 3B, Bogor, West Java, Indonesia

*ening.ariningsih@gmail.com

Abstract. Border areas can be a source of growth in food production in Indonesia. One of the provinces in the border areas having prospects as a source of food growth for export is West Kalimantan. This province has started to export food (mainly medium and special quality rice) to Malaysia via Sanggau district. However, food exports from the Kalimantan border are still in limited quantities and face several obstacles that have resulted in unsustainable food exports. This study aims to analyze the prospects and strategies for food exports (especially rice) from West Kalimantan border area. The study was conducted in September 2018 in three subdistricts of Sanggau District, namely Entikong, Sekayam, and Kembayan. Data were collected through focus group discussion, and SWOT analysis was employed. The results show that rice exports from the West Kalimantan border areas are in the Weakness-Opportunity (W-O) quadrant, indicating an opportunity to export but cannot yet be utilized because the existing strength is not enough to carry it out. The main opportunity is that the rice market actors are ready to export, while the main weakness is that the rice prices are not competitive with those from other exporting countries. The decision that can be taken is either (1) releasing existing opportunity and looking for other alternatives or (2) forcing them to work on this opportunity.

1. Introduction

According to Law Number 43 of 2008 on State Territory, the border area is part of the country's territory located on the inside along the borders of Indonesia with other countries. The border area refers to a geographically, politically, and culturally demarcated area that separates the sovereignty of a country from other countries [1]. Until recently, Indonesia faces some challenges in developing border areas because it is identical to rural areas, suburbs, underdeveloped areas, or impoverished areas that tend to be marginalized [2,3]. In addition, the border areas are still remote with underdeveloped infrastructure, economy, and information accessibility [4].

Various obstacles to accelerate the development of agriculture and related sectors in border areas include limited infrastructure [5], both physical and economic infrastructure (markets and marketing institutions), regional biophysical conditions, and minor socio-cultural friction (tribal friction). Furthermore, government policy and impartial political considerations are the biggest challenges. The acceleration of agricultural development in border areas must be comprehensively carried out, covering technical and technological, socio-cultural, and economic aspects [6]. Nevertheless, the border area can be a source of growth in Indonesia's new food production because it has quite large agricultural potential, both in area size, agroecosystem diversity, and biodiversity. The proximity of the location to neighboring countries is a geographical advantage and a positive factor that makes it easier to export. The Ministry
of Agriculture supports food development in border areas by preparing 300,000 hectares of land to develop organic rice farming in border areas such as Riau, Central Kalimantan, and West Kalimantan [7].

West Kalimantan is one of the provinces in the border areas that is a priority for agricultural development and is expected to become a national food producer. It has 15 subdistricts in 5 districts which are directly bordering with Malaysia (Sarawak): Paloh and Sajingan Besar in Sambas District, Jagoi Babang and Siding in Bengkayang District, Entikong and Sekayam in Sanggau District, Ketungau Hulu and Ketungau Tengah in Sintang District, Putussibau, Kedamin, Puring Kencana, Empanang, Badau, Batang Lupon, and Embaloh Hulu in Kapuas Hulu District [5]. Among them, Sanggau District is one of the most potential for agricultural development. Its strategic location in the border areas allows Sanggau to become a producer and a frontline for national food exports. Following the regional potential, rice is a commodity with prospects for export, mainly to neighboring countries such as Malaysia. West Kalimantan has started exporting rice to Malaysia via the cross-border post in Entikong, Sanggau District. The launching of rice exports to Malaysia was carried out on 20 October 2017 in Tunggal Bhakti Village, Kembayan Subdistrict, Sanggau District, as many as 25 tons of Inpari 33 medium rice worth Rp195 million [8]. This study aims to analyze the prospects and strategies for food exports (especially rice) from the border area of West Kalimantan.

2. Materials and methods

2.1. Materials

This study use both primary and secondary data. The study was conducted in September 2018 in three subdistricts of Sanggau District (Entikong, Sekayam, and Kembayan), which is in the border areas with Malaysia. The survey was conducted at the provincial, district, and subdistrict levels. At the provincial level, data and information were collected from the Office of Industry and Trade of West Kalimantan Province; Office of Agriculture and Horticulture; Food, Animal Husbandry, and Animal Health Services; and BULOG. At the district level, data and information were collected from the Office of Food Security, Food Crops, Horticulture, Fisheries and Extension; Department of Industry and Commerce; and BULOG.

In the early stages of the survey, data and information were collected from various agencies to identify which commodities are prospective for export. From the initial survey results, it was identified that rice is one of the commodities with export prospects to neighboring countries. A focus group discussion (FGD) was held with the heads and administrators of farmer groups, farmers, and rice collectors in the Entikong Subdistrict.

2.2. Methods

A SWOT (strengths-weaknesses-opportunities-threats) analysis was carried out to analyze the strengths, weaknesses (constraints), opportunities, and threats of rice exports from the West Kalimantan region through Sanggau District. The factors affecting exports can be divided into two categories, namely internal factors and external factors. These internal factors include strengths and weaknesses, while external factors include opportunities and threats. Strengths are situations or conditions that can have a positive influence now or in the future. Weaknesses are situations or conditions that are weaknesses possessed by exporters that can negatively impact now or in the future. Opportunities are external situations or conditions that become opportunities or opportunities to develop in the future. Threats are any threats that may be faced by exporters that can hinder the pace of export development.

2.2.1. Qualitative approach of the SWOT matrix. The qualitative approach of the SWOT matrix [9] is described by eight boxes. The top two boxes are the external factors consisting of opportunities and threats, while the two boxes on the far left are internal factors consisting of strengths and weaknesses. The other four boxes are strategic issue boxes that arise as a result of the meeting points between internal and external factors.
Table 1. Kearns’ SWOT matrix

| INTERNAL | EXTERNAL | OPPORTUNITIES | THREATS |
|----------|----------|---------------|---------|
| STRENGTHS|          | A Comparative advantage | B Mobilization |
| WEAKNESSES| C Divestment/investment | D Damage control |

2.2.2. Quantitative approach of the SWOT matrix. The qualitative SWOT data above can be developed quantitatively through the calculation of the SWOT analysis [10] to know for sure the actual position of the organization. The calculation is carried out through the following three stages.

1. Calculating the score (a) and weight (b) of factor points and the total number of multiplication scores and weights (c = a x b) on each SWOT factor. Then, calculate the score (a) of each factor point independently. Assessment of a factor point should not be influenced or affect the assessment of other factor points. The choice of the range of scores greatly determines the accuracy of the assessment but commonly used is from 1 to 10, assuming a value of 1 means the lowest score and 10 means the highest score. The calculation of weight (b) of each factor point is carried out interdependently. The assessment of a factor point is to compare its level of importance with other factor points. Therefore, the calculation formulation is the values obtained (the range of values is equal to the number of factor points) divided by the number of factor points).

2. Subtracting the total number of factors S with W (d) and factors O with T (e). The acquisition of a number (d = x) then becomes a value or point on the X-axis. At the same time, the acquisition of a number (e = y) then becomes a value or point on the Y-axis (Table 2 and Table 3).

Table 2. Calculation of the X-axis.

| No. | Strengths | Score (a) | Weight (b) | Total (c) |
|-----|-----------|-----------|------------|-----------|
| 1.  | .......................................................... | .......... | .......... | .......... |
| 2.  | and so on | .......... | .......... | .......... |
| Total weighted value of strengths | .......... | .......... | .......... | S         |
| No. | Weaknesses| Score (a) | Weight (b) | Total (c) |
|-----|-----------|-----------|------------|-----------|
| 1.  | .......................................................... | .......... | .......... | .......... |
| 2.  | and so on | .......... | .......... | .......... |
| Total weighted value of weaknesses | .......... | .......... | .......... | W (d)     |

Difference between total weighted values of strengths and weaknesses = S – W = x

Table 3. Calculation of the Y-axis.

| No. | Opportunities | Score (a) | Weight (b) | Total (c) |
|-----|---------------|-----------|------------|-----------|
| 1.  | .......................................................... | .......... | .......... | .......... |
| 2.  | and so on     | .......... | .......... | .......... |
| Total weighted value of opportunities | .......... | .......... | .......... | O         |
| No. | Threats      | Score (a) | Weight (b) | Total (c) |
|-----|--------------|-----------|------------|-----------|
| 1.  | .......................................................... | .......... | .......... | .......... |
| 2.  | and so on    | .......... | .......... | .......... |
| Total weighted value of threats | .......... | .......... | .......... | T (e)     |

Difference between total weighted values of opportunities and threats = O – T = y

3. Looking for the organization's position indicated by the dot (x,y) in the SWOT quadrant (Figure 1).
3. Results and discussion

3.1. Availability and balance of rice in West Kalimantan

West Kalimantan Province had a rice surplus of around 332 thousand tons in 2017[11]. Rice is surplus in almost all the 14 districts/cities in West Kalimantan Province. The exception is in Pontianak city, Singkawang city, and Melawi District. However, the calculation of the balance of rice availability and consumption needs does not consider the inflow of rice into the West Kalimantan region and each district/city due to data unavailability. Counting the availability of rice was done by converting unhusked paddy production to rice (with a conversion of 72.74%); minus the loss of grain for seeds, scattered, feed, and for non-food industry (7.3% total grain loss); then reduced by 3.3% of rice losses. The need for rice consumption is calculated by multiplying the total population by the average level of rice consumption of 91.9 kg/capita/year.

In addition to medium quality rice, Sanggau District is also prospective for developing superior local rice varieties. For instance, the Puncak Kapuas variety, similar to the Cianjur variety in taste and fragrance, is a high-yielding variety specific to the West Kalimantan region. Raja Uncak (Kapuas Hulu) variety is a local variety favored by the Malaysian market. These superior local varieties are generally grown semi-organically. In Sanggau, organic brown rice is also produced, while in Bengkayang, organic black rice is produced. This type of special quality rice has the potential to fill the Malaysian rice market. Trade of local varieties of rice to Sarawak-Malaysia in limited quantities has been carried out. Growing incomes, more health and nutrition awareness, and growing demand for high-quality rice are likely to boost the rice industry's potential, especially for organic and premium-quality rice [12].

3.2. Prospects of rice exports from the border areas of West Kalimantan

The following is the analysis results of the strengths, weaknesses, opportunities, and threats in the rice export policy from the border areas of West Kalimantan.

3.2.1. Strengths. The strength factors in encouraging rice exports from the border areas of West Kalimantan are as follows.
1. West Kalimantan's rice production and supply are generally in a surplus position. The agricultural sector in West Kalimantan is ready to export rice because the existing data shows a production surplus that allows it to export.
2. There are five cross-border posts (PLB) for export. In the West Kalimantan region, five gates in the border area can be export doors to Malaysia, namely in Sanggau, Bengkayang, Sambas, Kapuas Hulu, and Sintang districts. The physical infrastructure facilities have fulfilled the requirements for
3. The road infrastructure to the cross-border posts is relatively good and smooth. The road infrastructure is ready and in good condition for the Entikong (Sanggau) – Tebedu (Sarawak, Malaysia) border. Likewise, in the Sanggau District, office facilities are available for the needs of entering and leaving goods at the border gate (Office of Quarantine and Customs).
4. Government policy supports the efforts to increase food production and export food from the border. The Ministry of Agriculture has initiated to open the rice export market to Malaysia through the cross-border post in Entikong, Sanggau District. The type of rice exported is the Inpari 33 variety.
5. Farmer institutional in West Kalimantan is ready to develop rice production for export. Gapoktan in the Kembayan area has formed a cooperative named Koperasi Agro Inovasi Bakti Bersama. Currently, it plays an essential role in selling farmers' rice products. The cooperative is facilitated with the rice milling unit and operational fund assistance for the purchase of paddy grain. Learning from rice farming experience in Vietnam, the government can also provide assistance in the form of subsidized loan interest rates for the purchase of machinery and equipment [13].

3.2.2. Weaknesses. Internal factors that are weaknesses for the rice export strategy from the border areas of West Kalimantan are as follows.
1. There is no formal G to G agreement between Indonesia and Malaysia for bilateral trade in rice commodities. As long as the agreement has not been formed, this will be a significant obstacle in carrying out official exports from West Kalimantan to Malaysia. However, so far, ‘unofficial exports’ have been carried out in limited quantities, and the values are still below the ‘border trade agreement’ (of 600 RM). Such unofficial exports are also common in other border areas. For example, in Savannakhet Province, Laos, which lies between Thailand and Vietnam, small traders carried out informal border trading at the international checkpoints [14].
2. Indonesian medium rice in the Malaysian market cannot compete with imported rice from Thailand and Vietnam. The price of imported rice (from Vietnam or Thailand) in Kuching, Malaysia, is lower than the price of rice in West Kalimantan, with better quality. The high price of rice in West Kalimantan is mainly caused by the high cost of rice production due to production inefficiency. The natural and climatic condition of West Kalimantan along with expensive labor cost makes weeding cost high and yield relatively low.
3. Many 'mouse paths' for cross-border trade are one of the obstacles to legal exports. Along the Indonesia-Malaysia border in the West Kalimantan region, there are 'mouse paths' that can be used as illegal trade routes between Indonesians and Malaysians, including the rice trade, either from Indonesia to Malaysia or vice versa. Although not officially recorded, the rice trade to Malaysia has been carried out by the people of West Kalimantan for a long time in small quantities. The certain volume and values of Indonesia-Malaysia trade are not known because it collides with an unclear legal basis. In addition, the opportunity for illegal trade activities to occur is high because of the many exits/entrances and the relatively large area to monitor [15].
4. The quality of the rice locally produced is not following Malaysian preferences. Medium rice produced in the West Kalimantan region has not met the tastes of the Malaysian people. However, local rice is preferred in Malaysia because it is semi-organic.
5. Coordination between institutions (data, information, and others) for exports has not been well developed. One of the weaknesses of cross-border trade today is that too many parties are involved in its management (Office of Trade Services, Statistics (BPS), Immigration, Customs, and others). However, there is no good coordination among the institutions. There are still discrepancies in trade data (exports) to Malaysia published by the related agencies. The Border Management Agency that should handle cross-border trade issues or management has not shown its role properly.
6. The increase and sustainability of the production surplus are constrained by the suboptimal function of irrigation infrastructure and farm roads. Many irrigation canal networks are damaged so that they do not function optimally. Likewise, the farming practices are still not optimal.
7. Farmers’ resources are not ready for the export market. The farmers’ resources are still relatively low, so that rice cultivation is not optimal, resulting in low rice production and high production costs. Likewise, post-harvest technology has not been adequately implemented, so that the rice quality produced is still relatively low.

3.2.3. Opportunities. Several external factors that become opportunities for the rice export strategy from the border areas of West Kalimantan are as follows.
1. Malaysia's location as an export destination is very strategic. Malaysia’s geographical location, which borders Indonesia, both by sea and especially by land, makes rice can be exported with a short travel time and relatively low transportation costs.
2. Malaysian demand for rice is still high. Malaysia is a rice importing country with a total import of 1 million tons of rice. Such an import quota still opens up opportunities for Indonesia's rice exports. The relatively high purchasing power of Malaysians is also why the Malaysian rice market has great potential for exports of premium rice and Indonesian specialty rice.
3. The world rice market is relatively thin, while the countries that supply rice to the world market are limited. This is an opportunity for Indonesia to export.
4. Rice market players in West Kalimantan are ready to export rice to Malaysia. There are already rice export entrepreneurs who manage rice export permits. Besides, the Regional Government and the community around the border area of Sanggau District have high enthusiasm to support the development of medium and organic rice production.

3.2.4. Threats. Several external factors that pose a threat to the rice export strategy from border areas are as follows.
1. Land conversion from rice to oil palm. The reasons for this conversion at the farmer level, among others, are as follows: rice cultivation is considered more difficult than oil palm, oil palm farming is considered more profitable than rice farming, irrigation issues, and lack of knowledge about the policy of prohibiting the conversion of paddy fields. This land conversion will result in a decrease in rice production in West Kalimantan.
2. Politically, Malaysia is not yet willing to open an import market for Indonesia. Until now, Malaysia has not been willing to open a rice import market for Indonesia, even though Indonesia hopes that Malaysia can allocate 20% of its rice import quota, or around 150 thousand tons, by importing from Indonesia.
3. Thailand and Vietnam are increasingly expanding their export markets to Malaysia and Indonesia. The Thai rice export market is the most adaptable and very strong [16]. Thailand is ranked second out of the top five major exporting rice countries globally, while Vietnam is ranked fifth [17]. Thailand is also a market leader in South and Southeast Asia [18].
4. Climate uncertainty disrupts rice production capacity. Climate change causes vulnerability in rice production [19].

Based on the urgency and interrelationships analyses of each factor and the weighting of the factors in the four components in the analysis above, Table 4 and Figure 2 show that rice exports from the border areas of West Kalimantan is in the Weakness-Opportunity (WO) quadrant (-0.85;0.15). This position indicates that West Kalimantan has an opportunity to export rice, but it cannot be exploited because the existing strength is not sufficient to carry it out.

Table 4. Map of the strength of rice exports from the border area of West Kalimantan, 2018.

| Category       | Total weighted value |
|----------------|----------------------|
| Strengths      | 2.65                 |
| Weaknesses     | 3.50                 |
| Opportunities  | 3.23                 |
| Threats        | 3.09                 |
Table 5. The key factors for the success of rice exports at the West Kalimantan border.

| Internal factor | External factor |
|-----------------|----------------|
| **Strength**    | **Opportunity** |
| Government policy supports to increase production and export of food from the border (LPBE) | Rice market actors are ready to export |
| **Weakness**    | **Threat**     |
| Indonesian medium rice prices in the Malaysian market cannot compete with imported rice from Thailand and Vietnam | Politically, Malaysia is not yet willing to open up an import market for Indonesia |

3.3. Rice export strategy in the border areas of West Kalimantan

With the map of strengths in the (W-O) quadrant, the foremost opportunity is that rice market players are ready to export. The weakness is mainly that the price of Indonesian medium rice in the Malaysian market cannot compete with imported rice from Thailand and Vietnam. The decision options are (1) letting go of existing opportunities and looking for other alternatives or (2) forcing them to work on these opportunities. Suppose the choice is to continue to take advantage and develop existing export opportunities. In that case, programs or activities to overcome these weaknesses are especially those to increase the competitiveness of Indonesian rice in the markets of Malaysia and other countries. On the other hand, suppose the decision option is to give up the opportunity to export medium rice from the border area of West Kalimantan to Malaysia because it considers its weaknesses. The alternative policy that should be taken is to continue exporting rice to Malaysia, not in medium rice but special quality rice, especially superior local varieties of rice.

The strategies for developing rice production towards the export market in West Kalimantan can be pursued, among others, through (1) optimizing the utilization of existing land resources to be more productive through intensification and increasing planting intensity; (2) extensification by utilizing potential land that is still available; (3) the development of technological innovation in all supply chain elements; (4) continuous improvement of irrigation water management from upstream to downstream, construction of water harvesting reservoirs and pumping wells; and (5) facilitation of the need for production facilities such as fertilizers, seeds, and pesticides.
4. Conclusions
West Kalimantan has an opportunity to export rice, but it cannot be exploited because the existing strength is not sufficient to carry it out. The main opportunity is that the rice market players are ready to export. The main weakness is that the Indonesian medium rice prices in the Malaysian market cannot compete with imported rice from Thailand and Vietnam. The decision that can be taken is either (1) releasing existing opportunity and looking for other alternatives or (2) forcing them to work on this opportunity.

Suppose the decision is to give up the opportunity to export medium rice from the border areas of West Kalimantan to Malaysia due to its weaknesses. In that case, the alternative policy is to continue exporting rice to Malaysia in the form of special quality rice, especially superior local varieties that are in great demand by residents of Malaysia. These local rice varieties have been traded to Malaysia, although in limited quantities. However, if the decision is to continue to take advantage and develop existing export opportunities, programs or activities to overcome these weaknesses are needed, especially to improve Indonesian rice competitiveness in the markets of Malaysia and other countries.

References
[1] Raharjo S N I 2013 Kebijakan pengelolaan kawasan perbatasan darat Indonesia-Malaysia (Studi evaluatif di Kecamatan Entikong) Widyariset 16 73–80
[2] Budianta A 2010 Pengembangan wilayah perbatasan sebagai upaya pemerataan pembangunan wilayah di Indonesia J. SMARTek 8 70–82
[3] Mayona E L, Salahudin and Kusmatutu R 2011 Penyusunan arahan strategi dan prioritas pengembangan perbatasan antar negara di Provinsi Kalimantan Barat J. Tata Loka 13 119–34
[4] Pusat Sosial Ekonomi dan Kebijakan Pertanian 2017 Model Pengembangan Produksi dan Ekspor Pangan di Daerah Perbatasan (Bogor: Pusat Sosial Ekonomi dan Kebijakan Pertanian)
[5] Mayona E L, Salahudin and Kusmatutu R 2011 Penyusunan arahan strategi dan prioritas pengembangan perbatasan antar negara di Provinsi Kalimantan Barat J. Tata Loka 13 119–134
[6] Priyanto D and Diwyanto K 2014 Pengembangan pertanian wilayah perbatasan Nusa Tenggara Timur dan Republik Demokrasi Timor Leste Pengemb. Inov. Pertan. 7 207–20
[7] MSN 2017 Kementerian Perdagangan Ekspor Beras Organik MSN
[8] detikfinance 2017 RI Ekspor Perdana 25 Ton Beras dari Kalbar ke Malaysia detikfinance
[9] Kearns K P 2006 From comparative advantage to damage control: clarifying strategic issues using SWOT Nonprofit Manage. Leadership 3 3
[10] Pearce J A and Robinson R B 2006 Strategic Management: Formulation, Implementation and Control - 10/E (New York: McGraw-Hill)
[11] Dinas Ketahanan Pangan PKH Provinsi Kalimantan Barat 2018 Database (Pontianak: Dinas Ketahanan Pangan PKH Provinsi Kalimantan Barat)
[12] Bhandari H, Kumar P and Samal P 2017 Chapter 5. Structural transformation of the Indian Rice Sector The Future Rice Strategy for India ed S Mohanty, P Chengappa, Mruthunjaya, J K Ladha, S Baruah, E Kannan and A V Manjunatha (Amsterdam: Academic Press) pp 107–135
[13] Anh D T, Tinh T V and Vang NN 2020 The domestic rice value chain in the Mekong Delta White Gold: The Commercialisation of Rice Farming in the Lower Mekong Basin ed R Cramb (Singapore: Springer Nature Singapore Pte Ltd) pp 375–395
[14] Manivong P and Sacklokhham S 2020 Rice marketing and cross-border trade in Savannakhet White Gold: The Commercialisation of Rice Farming in the Lower Mekong Basin ed R Cramb (Singapore: Springer Nature Singapore Pte Ltd) pp 187–199
[15] Mukhtar Z 2014 Aspek hukum transaksi perdagangan lintas batas pada daerah perbatasan Undergraduate thesis (Makassar: Fakultas Hukum Universitas Hasanuddin)
[16] Nunti C, Yamaka W and Boonyakunakorn P 2020 Comparing the economics welfare on leading rice exports countries based on copula SEM: the case of India, Thailand, and Vietnam J. Phys.: Conf. Ser. 1592 012076
[17] Ngo-Thi-Ngoc and Nguyen-Viet 2021 Export performance: Evidence from agricultural product firms in Vietnam *Cogent Business Manage.* **8** 1861729

[18] Bairagi S, Gustafson C R, Custodio M C, Ynion J and Demont M 2021 What drives consumer demand for packaged rice? Evidence from South and Southeast Asia *Food Control* **129** 108261

[19] Ruminta, Handoko and Nurmala T 2018 Decreasing of paddy, corn and soybean production due to climate change in Indonesia *J. Agronomy* **17** 37–47