
The Potential of Sago (Local Food) As A Food Substitution in Meranti Islands District, Riau

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Abstract:

The food crisis is a serious problem in many countries, especially developing countries, even though various steps and policies have been taken to overcome it. Population growth, the intensity of environmental changes such as floods, droughts, extreme variability in temperature or rainfall are triggers for food crises. The threat of a food crisis has an impact on food scarcity, limited food supply, drastic increases in food and energy prices, high inflation and leading to malnutrition and poverty rates that are difficult to control. However, for Indonesia, apart from the food crisis being a threat, on the other hand the current food crisis could be an opportunity, because Indonesia has substitute food ingredients, one of which is sago, the potential and development of which is in the Meranti Islands Regency, Riau Province. The data analysis technique used to describe the potential of sago and its derivative products is analyzed through SWOT Analysis. The results of this study state that sago is a superior regional product that has enormous opportunities to be developed technically, economically and socially. Technically, the Meranti Islands Regency area is very suitable as a place to grow sago trees with the best quality results in Indonesia. The threat of a food crisis does not apply to Meranti Islands Regency; in fact, the threat has the potential to turn into an economic opportunity. The development of sago as a food substitute requires the role of a government with an entrepreneurial spirit. In the sago development policy and program, the Meranti Islands Regency Government, which has an entrepreneurial spirit, has a Core Strategy, Consequence Strategy, Customer Strategy, Control Strategy and Cultural Strategy. Where this strategy is an embodiment in the form of a technical strategy of the strategy in quadrant II (Diversification) of the SWOT analysis where this position indicates an organization (Meranti Islands Regency) that is strong (sago potential) but still faces big challenges

Keywords: Sago, Sago Potential, Food Substitution

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1. Introduction

The Russian-Ukrainian war that erupted at the end of February 2022 brought the world to an energy and food crisis. The food crisis is a serious problem in many countries, especially developing countries, even though various steps and policies have been

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taken to overcome this problem. (Warwick, 2013), (Sibhatu & Qaim, 2017). Food crises can be triggered by population growth problems, the intensity of environmental changes such as floods, droughts, extreme temperature variability or rainfall. (Ahmed et al., 2017), (Duchenne-Moutien & Neetoo, 2021), (Smith et al., 2000) and (Prosekov & Ivanova, 2018), stated that greater food demand and reduced crop productivity, higher food prices together with income inequality can have a negative impact on food access and availability for poor households.

The Indonesian Ministry of Agriculture released it on its official website www.pertanian.go.id that the recent food crisis is caused by climate change, the US-China trade war, Russia-Ukraine geopolitical tension, and the Covid-19 pandemic. The threat of a food crisis has an impact on food scarcity, limited food supplies, drastically rising food and energy prices, high inflation and leading to malnutrition and poverty rates that are difficult to control. (Hanjra & Qureshi, 2010). For Indonesia, besides the food crisis being a threat, on the other hand the current food crisis could be an opportunity. This is because Indonesia has the potential for diverse food substitutes and is a treasure of local wisdom and the availability of large areas of land that have not been used productively, so the government has created policies and programs to anticipate and deal with the global food crisis. Among these policies and programs, the Ministry of Agriculture has established a Strategy for the Development of Food Substitutes such as Sago, Cassava, Sorghum, Soybeans, Cane Sugar, Non-Cane Sugar, Chili/Shallots, Ducks/Chickens, Goats/Sheep and Porang. The development of food substitutes is mapped to areas that have the following potential:

Table 1. Mapping of Food Substitution Locations in Indonesia

No	Commodity	Location
1	Sago	Riau, Papua, West Papua
2	Cassava	West Java, Lampung
3	Sorghum	NTT, Central Java
4	Soya bean	Banten, West Java, Central Sulawesi, Central Java
5	Cane sugar	South Sumatra, West Java, East Java, East Kalimantan, Southeast Sulawesi
6	Non-Cane Sugar	North Sumatra, North Sulawesi, North Maluku, NTT
7	Chili/Shallots	Central Java, West Sumatra
8	Ducks/Chickens	West Java, Bali
9	Goat/Sheep	East Java, North Sumatra, NTB
10	Porang	East Java, South Sulawesi

Source: Ministry of Agriculture 2022

The results of the mapping carried out show that one of the food substitutes in Indonesia is sago, whose potential and development is in the Riau region. Riau Province is the largest sago producing region in Indonesia, this can be seen from the following table:

Table 2. Sago Production in Riau

No	Description	Amount
1	Production	274,807 Tons/year
2	Garden Size	54,000 Ha

Source: Badan Pusat Statistik 2021

As the largest Sago producing region in Indonesia and has a high level of quality Sago, this is reflected in the large number of Sago Plantation areas in Riau Province. There are three sago producing districts in Riau, namely Bengkalis Regency, Indragiri Hilir and the largest is Meranti Islands. Almost 40% of the national sago requirement is supplied from Meranti Islands Regency. The production of sago starch in this place reaches 205 thousand tons every year, with a plantation area of 54 thousand hectares. This article will explain more clearly the potential of Sago in the Meranti Islands Regency area as a Food Substitute Commodity.

2. Theoretical Background

Sago is a plant that is very familiar to the Malay people of Riau, so making sago a food substitute in Riau is not that difficult. Based on historical narratives that the Riau Malay people used to consume sago as a staple food, this is as explained by Tuafik Ikram Jamil (*Riau Malay Cultural Expert*) in the Meranti Sago History Dialogue on 29 October 2019, stating that sago is the staple food of the people in the Malacca Strait area, and sago is a mainstay trade commodity that shows Siak's power over Melaka.

Food substitution is a way of modifying food ingredients with other food ingredients where the ingredients have equivalent nutritional content and are needed in order to increase the nutritional value and economic value of the food product. (Potter & Hotchkiss, 2012). The category of local food *in* Indonesia, explained by Moerdijati Gardjito (UGM researcher), is food originating from a nation/region that has the following criteria: (1) it has been passed down from generation to generation, such as the history and history of the use of raw materials for making it, (2) the ingredients the raw materials used come from the local area, (3) the raw materials used for culinary delights must be owned and controlled by local residents, (4) the equipment used comes from local wisdom, and (5) the shape and taste of the food is something that is liked and liked. by the community it even becomes a food to remember when they are in another place. Commercial activities such as processing and marketing local food must be able to involve local entrepreneurs so that they have a positive impact on income and touch on aspects of improving the social economy of the community. The next aspect that can support " *responsible production & consumption* " is the unique traditional way of processing food, while from the consumer's perspective, consuming this food is based on longing/memories or appreciation for the existence of the food.

SWOT Analysis, In analyzing the external and internal environment of both companies and governments, management usually carries out an analysis using *tools* in the form of *SWOT Analysis*. SWOT analysis is used to inventory various factors

systematically and comprehensively in formulating company steps or strategies. When deciding on a strategic decision, it is always related to determining the mission, goals, strategy and policies of the organization. SWOT analysis is used to map all the strengths and weaknesses of an organization in order to provide considerations in making organizational development decisions based on its potential. Implementation of internal and external environmental analysis in organizations aims to provide an overview of the organization to become more focused in facing existing challenges or competition. The results of the SWOT analysis mapping can be used as a *benchmark* from various perspectives, both in terms of strengths and weaknesses as well as opportunities and threats that may occur in the future. This analysis discusses in depth how to increase strengths *and* opportunities, but simultaneously minimize *weaknesses* and *threats*. SWOT analysis can also be used as raw material in strategic planning. It functions as material in formulating and implementing strategies taken by the organization to achieve goals. (Iqbal Arraniri et al., 2022) stated that SWOT analysis is an analysis model for identifying the size and strength of an organization's strengths and weaknesses as well as the size of opportunities and threats that are likely to occur.

Research by (Nuringsih et al., 2021) examines *local food entrepreneurship related to traditional food typical of Kulon Progo district*, where the results of their research analyze the potential for developing *local food entrepreneurship* through SWOT analysis. The results of the research are that there is a strategy for developing *Local Food Entrepreneurship* through the government's role in issuing regulations that support *local food* in Kulon Progo, such as the "Bela Beli Kulon Progo" program. Through this regulation, it is hoped that harmony will be established between wisdom in the utilization and use of local food sources, increasing economic value through the commercialization of local food sources and government policies that pay attention to local wisdom in drafting regulations relating to the food sector.

Furthermore, research conducted by (Rebecca et al., 2022) explained that Based on the results of the research entitled; "Entrepreneurial Spirit in Traditional Food Businesses", it can be concluded that; 1. The individual characteristics of local food-based home industry entrepreneurs as reflected in formal and non-formal education, business hours, business orientation, and cosmopolitan mindset are in the low category, in addition to being middle-aged adults. 2. Supporting government policies related to increasing the local home food industry sector as reflected in programs such as business capital loans, assistance with business facilities and infrastructure, training to increase entrepreneurial competency, strengthening partnerships, and the existence of regulations that support the existence and development of the industry Household-based local food processing is in the low category in terms of accessibility and entrepreneur perception. 3. The level of entrepreneurial expertise in the local home food industry is reflected in knowledge related to strategic management, commitment, conceptual, opportunities, organization, relationships, learning and technical knowledge in the low category, except for individual knowledge which is in the medium category. business motivation, cosmopolitan mindset, and government policy support for the development of a local food industry based on *Home Industries*. 5. To improve entrepreneurial skills in the local household-based food industry, apart from

increasing formal education, non-formal education is needed through training and/or counseling, as well as government policy support in the form of providing business capital assistance, providing assistance with facilities and infrastructure, training and/or counseling (extension), partnership facilitation and legislation. 6. Wider opportunities (access) are given to local, household-based food industry entrepreneurs to obtain non-formal education.

3. Methodology

The methodology used in this research is SWOT (Strength, weakness, Opportunities and threats) analysis. According to (Christina, 2018), SWOT analysis is the process of systematically identifying various factors that exist both internally and externally to formulate a company strategy. This research, the data collected based on observations, interviews and secondary data obtained from related agencies and from the Central Statistics Agency (Badan Pusat Statistik, BPS), is described and processed so that results are obtained that can describe the potential of Sago (*Local Food*) as a food substitute in Meranti Islands Regency, Riau.

4. Empirical Findings/Result and Discussion

Meranti Islands Regency is a division of Bengkalis Regency which was formed on December 19 2008. Geographically, Meranti Islands Regency is located at coordinates between approximately 0° 42' 30" - 1° 28' 0" North Latitude, and 102° 12' 0" - 103° 10' 0" East Longitude and is located on the East Coast of Sumatra Island, with a coast that borders a number of neighboring countries so that Meranti Islands Regency is included in the Indonesia-Malaysia-Singapore (IMS-GT) economic growth *triangle area*. In order to take advantage of the opportunities and advantages of this geographical position, the Meranti Islands Regency Government is expected to encourage economic growth in border areas with neighboring countries Malaysia and Singapore, so the Meranti Islands Regency area has the potential to become a Cross-Border Gateway or International Gateway. Meranti Islands Regency has several plantation commodities with great potential such as sago (*Metroxylon SP*), coconut commodities, rubber, areca nut and coffee. Until now, plantation potential has only been traded in the form of raw materials outside regions such as Japan, South Korea, Batu Pahat Malaysia, Singapore, Pekanbaru, Batam, Cirebon and Medan. The potential of these plantations has not been maximized to become downstream industrial products, so they have not provided added economic value that has a broad impact on the welfare of local communities.

Sago (*Metroxylon sp*) is a plantation commodity that is no longer foreign to people in Indonesia. As one of the superior commodities, sago is categorized as a commodity that has an important source of carbohydrates for some of the Indonesian population, including in Riau Province. The great potential in managing sago for food and energy security is very promising for the future, especially now, where the world is facing a food crisis caused by climate change and war in several parts of the world. As a commodity that is familiar and plays a very important role in people's lives, both as a

commodity and socio-cultural, nationally, sago is included in the superior crop category, but in reality sago cultivation is still not handled optimally and intensively by the community, this is in accordance with the results of interviews with local communities in Selat Panjang Meranti (Mr. Ujang), from the results of the interview, it was concluded that the community in cultivating sago trees is only traditional, there are no innovations and new breakthroughs in terms of planting sago trees. In line with the government's food security program in order to anticipate the food crisis that is hitting the world, the Government through its Ministry of Agriculture considers it necessary to make efforts through work programs in terms of increasing capacity and potential related to the development of sago plantations and agro-industry. This is done because sago is a highly nutritious substitute crop for rice and has become a staple food in certain areas, besides that, strategically and with business potential, sago can be used as a food reserve, energy and industrial raw material, both on a small business scale. medium (SME) and industrial scale.

Based on data obtained from (Director General of Plantations, Ministry of Agriculture 2017) the largest area and production of Indonesian sago is in 2 regions, namely Papua and West Papua Provinces and the Riau region. For your information, the area of sago plantations in Riau Province is the largest contributor to sago production, namely around 40 percent of the area of sago plants in Indonesia, namely in 2015, 2016 and 2017 it was 42.6%, 42.0%, 41.8 %.

Based on data, sago production in Riau in 2015, 2016 and 2017 contributed 86.3%, 85.8% and 85.5% of the total sago production in Indonesia. From this data, if we compare the area with production, the Riau region has the advantage that its production exceeds that of the planting area, this is because sago plants in Riau have been cultivated by both the community and companies (Director General of Plantations, Ministry of Agriculture, 2017). Of the sago area in Riau Province, 75.86 percent (63,491 hectares) is community plantations and the remainder (24.14%) is private plantations.

The sago plant has great potential to be developed as an alternative food ingredient for the Indonesian people. This is because sago can produce up to 25 tons of dry starch per hectare (Ha), far more than rice or corn. The dry starch content in sago is above the starch content in rice which is only 6 tons per Ha. Meanwhile, dry corn starch is only 5.5 tons (PUD Riau Innovation Cluster Masterplan, 2018).

Table 3. Area of Featured Crop Commodities
Meranti Islands Regency 2022

Commodity	Area (Ha)
Sago	42,000
Coconut	32,000
Rubber	22,000
Coffee	24,000
betel nut	500

Source: *Food Security and Agriculture Service, 2023*

Table 4. Area Area, Number of Farmers and Productivity of Sago Plantations in Meranti Islands Regency in 2022

N o	Subdistrict	TBM (Ha)	TM (Ha)	JMLH (Ha)	Number of Factorie s (UNITS)	Farmer s (KK)	Production (TON/Year)	Productivit y (Kg/Ha)
1	High cliff	-	381	381	3	296	3,296,793	8,653
2	T. West High	1,486	7,535	9,021	36	2,511	67,799,930	8,998
3	Stimulate	136	387	523	3	749	3,482,226	8,998
4	Stimulate BRT	-	255	255	-	246	1,979,565	7,763
5	Merbau	2,647	2,724	5,371	7	1,903	24,513,276	8,999
6	T. East High	7,286	9,398	16,684	33	5,548	86,236,048	9,176
7	P. Merbau	849	1,298	2,147	5	1,322	11,527,538	8,881
8	Coastal Stimulatio n	386	1,969	2,355	5	1,227	17,908,055	9,095
9	Putri Puyu Lake	375	3,174	3,549	5	2,267	30,270,438	9,537
Amount		13,165	27,121	40,286	97	16,069	247,013,869	

Source: Food Security and Agriculture Service, 2023

Sago as one of the Food Substitute commodities in facing the Food Crisis that is hitting the world, of course needs to be studied academically in a prospectus based on an analysis of strengths, weaknesses, opportunities and threats. Based on interviews with related agencies, business actors and the community, a SWOT analysis can be mapped as follows:

Table 5. SWOT Analysis Matrix of Sago as a Food Substitute

Strength (Strength):	Weakness (Weakness):
1. Including Regional Featured Products 2. Get support from the Central Government Nor Region 3. Has Good Quality and Quantity 4. Low planting costs 5. Many Derivative Products Nearly 500 Derivative Products 6. Widely used as raw material for MSMEs and Industry	1. There is no innovation or deep research yet 2. Development of Sago Plant Cultivation 3. Prices tend to fluctuate among people 4. Farmers and MSMEs 5. Human Resources in Management Still 6. Traditional 7. Derivative Product Processing Technology 8. Still minimal.

Opportunity (Opportunity):	Threat (Threat)
1. Large market potential as 2. Food Substitution Commodities due to 3. The Food Crisis Hitting the World. 4. Absorbing Local Workers 5. 3. Development of the MSME Industry 6. 4. Community welfare increases	1. The market is controlled by the Corporate Cartel. 2. Harvest failure or drought as a result of climate change that is hitting the world 3. Change in People's <i>Mindset</i> (Planting Other Plants to Replace Sago 4. Forest and Land Fires

Table 6. Evaluation of Internal Factors Matrix

Key Internal factors	Weight	Ratings	Mark
Strength (Strength)			
Including Regional Featured Products	0.07	4	0.28
Get support from the Central and Regional Government	0.2	4	0.8
Has Good Quality and Quantity	0.15	4	0.6
Low planting costs	0.05	4	0.2
Many Derivative Products Nearly 500 Derivative Products	0.08	3	0.24
Widely used as raw material for MSMEs and industry	0.1	4	0.4
Total			2.52
Weakness			
There has been no innovation or research in the development of sago plant cultivation	0.07	3	0.21
There has been no innovation or research in the development of sago plant cultivation	0.05	4	0.2
Prices tend to fluctuate among farmers and MSMEs	0.1	3	0.3
Human Resources in Management Still Traditional	0.08	3	0.24
Derivative Product Processing Technology is Still Minimal	0.05	4	0.2
Total value			1.15
Total			3.67

From the results of the IFE (*Internal Factor Evaluation*) matrix above, it can be seen that the ability of Sago as a Food Substitute is quite reliable, this can be seen from the support of the Central and regional governments for the Sago Industry itself so that the rating obtained is high. Apart from that, Sago in Meranti Islands Regency has good quality and large production capacity (quantity), this can be seen from the rating given. Apart from that, it is also necessary to pay attention to the problems faced in the form of the absence of research on the development of sago plants, prices that are still fluctuating and technology for processing derivative products that is still minimal which will have an impact on the Sago industry itself so that this analysis is given quite high weight. From the resulting total of 3.67, it can be seen that internally the position of Sago as a Food Substitute is quite strong.

Table 7. Evaluation of External Factors Matrix

Key External factors	Weight	Ratings	Mark
Opportunities (Opportunities)			
Large market potential as a food substitute commodity due to the food crisis that is hitting the world	0.2	4	0.8
Absorbing Local Workers	0.08	2	0.16
Development of the MSME Industry	0.08	3	0.24
Increased Community Welfare	0.04	3	0.12
Total			1.4
Threat (Threat)			
The market is controlled by the Corporate Cartel.	0.2	4	0.8
Harvest failure or drought as a result of climate change that is hitting the world	0.16	4	0.64
Change in Community <i>Mindset</i> (Planting Other Plants to Replace Sago)	0.04	2	0.08
Forest and Land Fires	0.2	3	0.6
Total value			2.12
Total			3.52

the External Factor Evaluation (EFE) Matrix above, it can be seen that Sago as a Food Substitute is an important thing to pay attention to by the Government and MSEs, in this analysis the potential of Sago is given the highest rating. However, it is also important to pay attention to the sago industry regarding large companies forming cartels that can control the price of sago itself, as well as climate change that can result in land fires in sago plantations. The total value resulting from the analysis above is 3.52, indicating that the position of Sago as a Food Substitute is relatively good in its development in order to overcome the Food Crisis that is hitting the world.

5. Conclusions

Based on the results and discussion, it can be concluded that the potential for Sago (*Local Food*) as a Food Substitute in the Meranti Islands Regency, Riau; Sago is still a superior regional product which has enormous opportunities to be developed both technically, economically and socially. Technically, the Meranti Islands Regency area is very suitable as a place to grow sago trees with the best quality results in Indonesia. Economically, sago is a raw material for MSMEs and industry in developing various products. It is known that currently sago has been processed into 350 derivative products and has very broad market opportunities. Socially, sago can still be the main food for people in Riau province, especially coastal areas, where currently the total sago production in Meranti Islands Regency is 247,013,869 (Tons/Year). If you compare this figure with the food needs of the people of Meranti Islands Regency, it far exceeds, with the meaning of the words that Meranti Islands Regency is self-sufficient in food, especially Sago and this condition can make Sago a Food Substitute, especially in Meranti Islands Regency, Riau. The development of sago as a food substitute requires the role of a government with an entrepreneurial spirit

(entrepreneurship *government*). In the sago development policy and program, the Meranti Islands Regency Government, which has an entrepreneurial spirit, has a Core Strategy, Consequence Strategy, Customer Strategy, Control Strategy and Cultural Strategy

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