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INVESTIGATION ON BARRIERS FOR NATIVE CASSAVA STARCH EXPORT IN AYEYARWADDY REGION, MYANMAR

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ABSTRACT

The purpose of this research is to identify and prioritize the barriers for exporting native cassava starch in Ayeyarwaddy Region, Myanmar which twelve barriers were identified from preliminary interview with managers, previous research and reports. The barriers were categorized into three categories which are production barriers, processing barriers and marketing barriers and used the Analytic Hierarchy Process (AHP) method for prioritizing the barriers. The data were collected by using structured questionnaires from experts in cassava starch factory in Ayeyarwaddy Region, Myanmar. The results showed that processing and marketing barriers are the two most important barriers categories. The overall ranking barriers reveal that lack of modern processing equipment/ technique followed by lack of market diversification and the finding can be a guideline for both government and private sector for enhancing the future export.

Keywords: Cassava starch, exporting, Barriers, Myanmar, AHP

1. INTRODUCTION

Cassava is an important multi-purpose crop and was introduced in the middle of the 19th century in Myanmar. Ayeyarwaddy is the principal cassava producing region which accounts for about 44% of the total national production. In 2017, the growing area of cassava is 12789 (hectares) and annual root production is about 155,000 ton and starch production is about 43,400 ton (Thura, 2017). Small and medium scale cassava factories are mainly used almost all cassava roots for produce starch and marked to the domestic food industries, paper industries and cassava pulp (by product) residue from starch factories sell to fish and chicken feed production factories.

Nowadays, cassava-based products are high demand in domestic and foreign markets. This will support the Myanmar economy through export and internal substitution for import. Aung (2018) says that almost all cassava roots from Myanmar are processed as starch and are sold to domestic food industries. According to the depth interview with secretary-associated of cassava growers, millers, trader association and cassava starch trader and cassava starch factory managers of Ayeyarwaddy Region, this region have a lot of obstructs to export cassava starch because of quality of cassava starch is poor that is why all cassava millers use locally machines and equipment and still use traditional practice, sun-drying to produce starch. Moreover medium scale cassava factories lacked finance to use the modern processing facilities and equipment. If they use modern processing

facilities, are concerned the raw material supply and labor intensive. Thus, the research objective is to study the current barriers of cassava production, starch processing and marketing for cassava starch export and to prioritize the barriers for cassava starch export in Ayeyarwaddy Region, Myanmar.

2. CASSAVA INDUSTRY IN MYANMAR

2.1 Current situation of cassava in Myanmar

Cassava is a crop, one of the important agricultural products in Myanmar because this crop can give the food, feed and incomes for farmers and has become a cash crop to be sold for industrial use. Nowadays cassava is planted in almost a whole country. Because the growing area of cassava has increased from 1998 to 2016, the production has increased in Myanmar. Recently, Myanmar has covered the cassava plantation area of 36,625 (hectares) in 2016 and while the average yield was 11.83 million tons and the total production 433,378 tons (DAP, 2016).
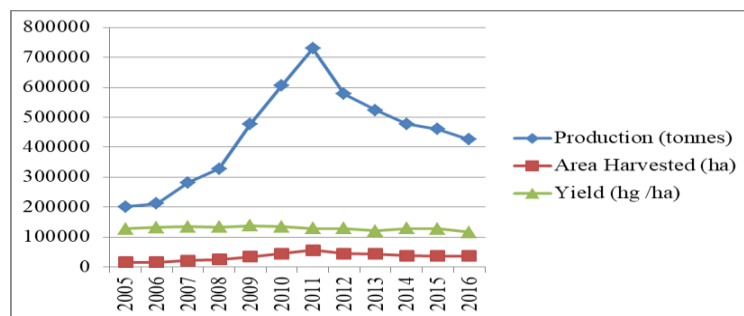

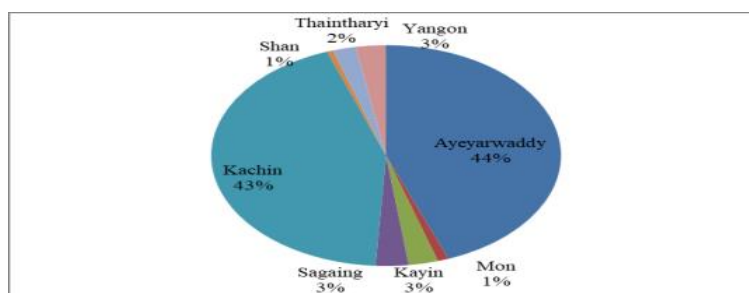**Figure1: Cassava Production, Area Harvested and Yield in Myanmar (FAOSTAT, 2016)**

Figure 2: Percentage of Cassava Production in Myanmar (DAP, 2016)

In Myanmar, there are seven states and seven regions, cassava is grown only six states and six regions. The major growing areas are Ayeyarwaddy region followed by Kachin state, Sagaing region, Yangon region, Kayin state, Thanintharyi region and Mon State.

2.2 Cassava production, starch processing and marketing in Ayeyarwaddy Region

In Myanmar, generally, farmers have planted cassava in the start of the rainy season (May and June) and it harvested in December to February. Harvested cassava roots are sold by farmers to local

processing factories or traders. Cassava has planted by some farmer as a sole crop and some have used the form of intercropping type. Recently, some farmers use mechanization in cassava farming and cassava is planted using the mounds method.

According to the interview, there are four steps in processing to produce cassava starch. Firstly, peeling is mostly done manually. Second, after the peeling, the cassava was washed and grated into grater. And dewatering is carried out manually. Third is Drying, almost all cassava processors use traditional practices such as sun-drying method for starch production. So this region indicates that lack of adequate drying facilities was the major obstacle to flour processing. And fourth step is milling after drying cassava. Processing season is from Jan to First week of April.

Almost cassava root are processed as a starch and marketed to domestic food industries including snack, wafer, sago and paper industries. Cassava market in Ayeyarwaddy Region is monopolized by only one trader who can buy large volumes of dry starch at any time and cassava root prices are also directly influenced by dry starch price (Aung, 2018). The cassava starch price situation in Ayeyarwaddy Region, Myanmar from 2007 to 2017 showed in the following figures.
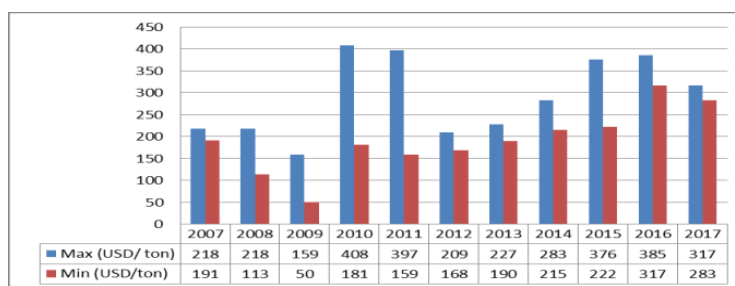

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Max (USD/ ton)	218	218	159	408	397	209	227	283	376	385	317
Min (USD/ton)	191	113	50	181	159	168	190	215	222	317	283

Figure 3: Cassava Starch Price in Ayeyarwaddy Region (Thura, 2017)

3   BARRIERS IDENTIFICATION FOR CASSAVA STARCH EXPORT

Cassava starch export obstacles are actual and perceived as barriers in Ayeyarwaddy Region, Myanmar. Thus, this study was done through a depth interview with experts who have knowledge full about cassava business, existing literature review, reports, related research and theory to identify barriers for cassava starch export in Ayeyarwaddy Region, Myanmar. Then, barriers were categorized into three categories, production, processing and marketing barriers. The grouping of barriers is shown in table 1 and little descriptions of each barrier as follow.

Table 1: Barriers for cassava starch export in Ayeyarwaddy Region

Barriers dimension	Sub-barriers	References
Production barriers	Lack of improved cassava varieties Lack of good agronomic practices	Aung (2018) Wenjum et al, 2016

	Labor intensive	Howeler (2006)
	Severe pest and disease outbreak	Akinnagbe (2010)
Processing barriers	Lack of modern processing technique/ equipment	Rahman & Awerije (2016)
	Lack of technologies on waste management	Aung, M. (2018)
	Lack of adequate funding for setting up appropriate drying plants	Addy et al, (2004)
	Poor quality of cassava starch	Akinnagbe (2010)
		Howeler (2015)
Marketing barriers	Transportation and Logistics problem	Howeler (2006)
		Morgan & Katsikeas (1997)
	Price fluctuation	Rahman & Awerije (2016)
	Lack of market diversification	Pinho & Martins (2010)
	Lack of knowledge of quality standards of foreign markets	

3.1 Production barriers

Production barriers are related to the practices of cassava production that completely differed across the region, manual, partially mechanized, or animal powered for land preparation and depend on the cassava production technology or cultivation technique, planting practices, plant protection, plant treatment, and variety of cassava. There are four production barriers in this study.

3.2 Processing barriers

Processing barriers about cassava starch affect its cassava industry development, quality of product, access of foreign market. These barriers are related to starch processing techniques, processing machine/equipment, waste water treatment method. There are four processing barriers are discussed in this study.

3.3 Marketing barriers

The marketing constraints about cassava and cassava based product are inaccessible markets, unstable prices as the main obstacles (Rahman & Awerije, 2016). Marketing is one of export barriers and that associated with the functions such as quality standards of foreign markets (Pinho and Martins, 2010), transportation and delivery problems (Kedia and Chhokar, 1986), logistic problems (Morgan & Katsikeas, 1997).

4 METHDOLOGY

According to the cassava growers, millers, trader association in Ayeyarwaddy Region-Myanmar, (2018) population of cassava starch factory are 200 in Ayeyarwaddy Region. Using the non-probabilistic and purposive sampling, 20 medium scale cassava starch factory are aimed as the sample size. Data were collected and gathered through interview and questionnaires and used Analytic Hierarchy Process (AHP) method to analyze the data.

4.1 Analytical Hierarchy Process (AHP)

The Analytic Hierarchy Process (AHP) is a way of "measurement through pairwise comparisons and depend on the judgments of experts to derive priority scales" (Saaty, 2008). In the first step, construct pair-wise elements matrix and the elements which are compared by the different criteria. The second step computes a normalized pair-wise matrix that sums each column of the pair-wise comparison matrix and divides each element in the matrix by its column totals. And then calculates the weighted matrix that the sum of the normalized column of matrix divide by the number of criteria used. The third step calculates the consistency Ratio. If C.R. is ≤ 0.10, this calculation is considered acceptable range (Saaty, 1980).

5   ANALYSIS RESULT

5.1 Category hierarchy result

Analytical results about barrier categories for cassava starch export are shown in Table 2. The three categories result from managers who are expert in this business and indicated that processing barriers (42.85%) highly affects the cassava starch export in Ayeyarwaddy Region, Myanmar, followed by marketing barriers (42.10%) and production barriers (15.04%).

Table 2: Barrier rankings for cassava starch export

Barrier Categories	Priority Weight	Priority Weight (%)	Rank
Production Barriers	0.150	15.04	3
Processing Barriers	0.429	42.85	1
Marketing Barriers	0.421	42.10	2

Consistency Ratio (CR) = 0.0003

5.2 Results of sub-barriers

The results priority weights of sub-barrier are shown in table 3, indicating the labor intensive (61.59%) within production barriers is the highest obstacle to export cassava starch in Ayeyarwaddy Region, followed by lack of good agronomic practices (16.59%), lack of improved cassava varieties (16.13%) and severe pest and disease outbreak (5.69%).

Table 3: Production barrier rankings

Barriers	Priority Weight	Priority Weight (%)	Rank
Lack of improved cassava varieties	0.161	16.13	3
Lack of good agronomic practices	0.166	16.59	2
Labor intensive	0.616	61.59	1
Severe pest and disease outbreak	0.057	5.69	4

Consistency Ratio = 0.0518

For the processing barriers, lack of modern processing technique/ equipment (46.21%) was mentioned the greatest barriers for cassava starch export and then followed by lack of adequate

funding for setting up appropriate drying plants (27.37%), poor quality of cassava starch (13.45%) and lack of technology on waste management (12.97%) as shown the results in Table 4.

Table 4: Processing barrier rankings

Barriers	Priority Weight	Priority Weight (%)	Rank
Lack of modern processing technique/ equipment	0.462	46.21	1
Lack of technology on waste management	0.130	12.97	4
Lack of adequate funding for setting up appropriate drying plants	0.274	27.37	2
poor quality of cassava starch	0.135	13.45	3

Consistency Ratio (CR) = 0.0817

Within marketing barriers, lack of market diversification (46.15%) was found to be the greatest important barriers for cassava starch export, followed by price fluctuation (40.01%), lack of knowledge of quality standard of foreign markets (6.99%) and transportation and logistics problems (6.85%) as shown in Table 5.

Table 5: Marketing barrier rankings

Barriers	Priority Weight	Priority Weight (%)	Rank
Transportation and logistics problems	0.069	6.85	4
Price fluctuation	0.400	40.01	2
Lack of market diversification	0.462	46.15	1
Lack of knowledge of quality standards of foreign markets	0.070	6.99	3

Consistency Ratio (CR) = 0.0008
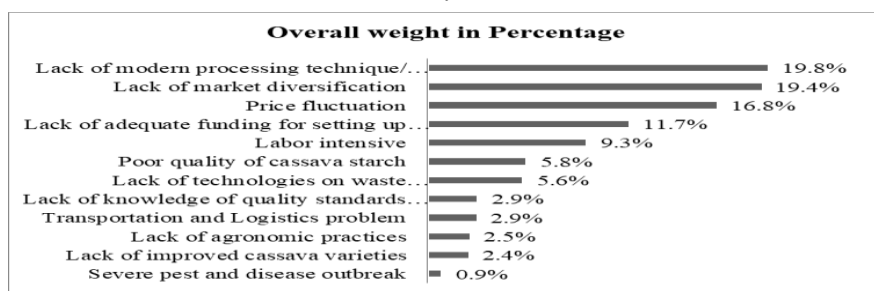
5.3 Overall ranking results

Figure 4: **Overall ranking of barriers**

6   DISCUSSION AND CONCLUSION

This research is among the first to prioritize the barriers for cassava starch export in Ayeyarwaddy Region, Myanmar, therefore, its outcomes may have beneficial implications for cassava growers, millers and traders in Ayeyarwaddy Region. According to the result, the greatest barriers are processing barriers, followed by marketing barriers and production barriers. In Ayeyarwaddy, processing sector about cassava business is still under development and uses the traditional method and lacked of capital for setting up modern processing facilities which affects the quality of product, may be the obstruct to enter the foreign market especially for export.

Marketing barriers were described as the second highest-ranked barriers. Cassava-based products market in Ayeyarwaddy Region, have still obstruct to enter into foreign market. Next, the third ranked barriers were reported production barriers. Cassava farmers lacked good planting material, including new varieties with higher yield and higher starch content, knowledge for plant protection and systematic cultivation practice that affect low productivity and raw material supply.

Under production barriers, the labor intensive was the greatest-ranked barrier. With improving the technology and quicker information flow, majority of young people are migrating to cities and abroad to get more income and better employment. This situation decreased income from agricultural sector and increased production costs and affect agricultural production rate.

In the processing category, lack of modern processing techniques/ equipment, lack of adequate funding for setting up drying plants and were graded first and second barriers. Especially most of cassava processors want to set up modern processing equipment and can't afford to buy these facilities. So processing sector were significant role for enhancing export opportunities and cassava sector improvement. Similarly, in the marketing category, lack of market diversification was the biggest barriers for cassava starch export in Ayeyarwaddy Region. To access market diversification including domestic and foreign, promote various cassava product and reduce depending on one product particularly starch (Aung, 2018).

The overall ranking barriers reveal that lack of modern processing equipment/ technique followed by lack of market diversification, price fluctuation, lack of adequate funding for setting up appropriate drying plants, labor intensive are the top five barriers for cassava starch export and cassava sector development in Ayeyarwaddy Region, Myanmar. Barriers ranking may help address the greatest obstacles for cassava starch export in Ayeyarwaddy.

7   ACKNOWLEDGMENTS

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