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VALUE CHAIN STUDY OF PAPUA NUTMEG IN FAKFAK DISTRICT

Studi Rantai Nilai Pala Papua di Kabupaten Fakfak

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Abstrak

Pala Papua merupakan komoditas unggulan Kabupaten Fakfak di subsektor pertanian. Petani pala belum dapat menikmati nilai tambah yang optimal dari hasil produksi, karena menghadapi beberapa permasalahan yaitu penentuan harga, pengembangan produk turunan dan akses pasar. Tujuan penelitian ini yaitu memetakan rantai nilai pala Papua di Kabupaten Fakfak dengan memahami karakteristik aktor pada rantai dan potensi untuk pengembangan. Penelitian ini menggunakan pendekatan kualitatif dengan key informant interview digunakan dalam teknik pengumpulan data. Hasil penelitian menunjukkan, aktor yang terlibat pada rantai nilai pala Papua meliputi pemasok bibit, petani, pengumpul lokal, BUMKAM, IRT, pedagang antar pulau dan koperasi. Pemanfaatan daging buah pala menjadi potensi dalam meningkatkan nilai tambah produk olahan pala di Kabupaten Fakfak.

Kata Kunci : Rantai nilai, pala Papua, Kabupaten Fakfak

Abstract

Nutmeg is the main commodity at the Fakfak district of Papua in the agriculture subsector. Yet, the farmers have not been able to enjoy optimal added value from production results. Some of the problems included are pricing, developing derivative products and market access. The purpose of this study is to map the nutmeg value chain in the Fakfak district by understanding the characteristics of actors influencing the chain and the potential for its development. This study uses a qualitative approach with the main instrument of interviews used in data collection techniques. The results showed that actors involved in the nutmeg value chain are seed suppliers, farmers, local collectors, BUMKAM (village enterprise), IRT (home industry), inter-island traders and cooperatives. The use of nutmeg meat has become a potential in increasing the added value of processed nutmeg products in Fakfak District.

Keywords: Value chain, Papua nutmeg, Fakfak District

INTRODUCTION

Local nutmeg of Papua known as the Papua nutmeg (*myristica argentea warb*) is a native plant of Fakfak and is cultivated by almost the majority of the local population in the district. Papua nutmeg is a leading commodity at the district in the agricultural subsector because it has a very significant contribution to the local economy by supplying 6% of the value of national production (Musaad et al, 2016). Nutmeg also has been known since the Dutch colonial era in the district (Andrianto & Rahardja, 2017). But lately, nutmeg farmers have not been able to enjoy optimal production results. Some of the problems included are pricing, developing derivative products and market access (Andrianto & Rahardja, 2017). Nutmeg has a great potential to produce various derivative products. Nutmeg oil produced from the extraction of seeds is one of Indonesia's export commodities (Ma'mun, 2013). The high demand for nutmeg oil is due to its very wide use, such as raw materials for the perfume industry, cosmetics, pharmacy, food and beverages, natural flavoring and also treatment (Sipahelut & Telussa, 2011).

Value chain studies examine all actors involved in it and the relationship between the two and the activities in each chain (Lie

et al, 2013). The value chain approach involves addressing the main obstacles and opportunities faced by each actor at various levels of it with activities such as ensuring access to various inputs needed, facilitating access to cheaper or better inputs, strengthening delivery and financial services or increasing access to higher value added products (Chagomoka et al, 2014). The purpose of this study is to map the value chain of Papua nutmeg in Fakfak district by understanding the characteristics of actors in the chain and the relationships between the actors involved, including the study of nutmeg processed product flow through chains, types of processes or activities as well as opportunities and constraints. The analysis technique from Hellin & Meijer (2006) was used to map the value chain of the Papua nutmeg in Fakfak district.

RESEARCH METHODOLOGY

The sampling technique used the snowball method with respondent is selected based on recommendation from previous respondent. The snowball technique is a sampling technique through surveys that is usually used in sociology, psychology, or management studies and is recommended when the population cannot be restricted or specified in detail (Dragan & Isaic-Maniu,

2013). Data collection was conducted in November and December 2017 in six districts; Fakfak District, Middle East Fakfak District, Central Fakfak District, West Fakfak District, Kayauni District and Kokas District. Data collection techniques used interviews that designed to provide in-depth information from someone who is identified as knowledgeable about a particular subject (Elmendorf & Luloff, 2006).

Respondents that interviewed were three seed suppliers, twenty-four farmers, five local collectors, three inter-island traders, five home industries, one village enterprise (BUMKAM) and one cooperative. As a descriptive tool, the value chain focuses on analyzing the micro and macro aspects involved in the production and exchange between the actors involved (Chagomoka et al., 2014). Value chain can be mapped and analyzed using Value Chain Analysis (VCA) which includes qualitative or quantitative tools (Hellin & Meijer, 2006).

This study used a qualitative approach to explore the condition of the Papua nutmeg value chain in Fakfak district. There are no fixed rules between which research approach is better but there is good reason to recommend that a qualitative approach is used first (Hellin & Meijer, 2006).

RESULTS AND DISCUSSION

Nutmeg can be grouped into four parts namely flesh, mace, shell and seed flesh (Andrianto & Rahardja, 2017). The parts of nutmeg with high economic value are seeds and mace which can be used as nutmeg oil (Sipahelut & Telussa, 2011). Seeds and mace are generally sold in dry form packaged into jute sacks and marketed outside regions located at Surabaya and Makassar. For instance, between 1970s and 1990s, the nutmeg was exported directly by local Fakfak entrepreneurs to Singapore, Hong Kong and parts of Europe. But, since the one-door export policy was established, exports were carried out through intermediary traders in Surabaya (Andrianto & Rahardja, 2017).

In Fakfak district, there has been no processing of derivative products from seeds and mace as processed into essential oils, while nutmeg meat has been processed into sweets, syrups, fruit juices and soy sauce. The product is marketed by cooperatives with a market segment of tourists visiting Fakfak. The capacity of the use of nutmeg in the production however, is still relatively small. There is no medium or large scale industry involved in nutmeg meat processing. The abundance of raw materials has become an opportunity for the

development of the nutmeg meat processing industry in Fakfak.

The main activities in the nutmeg value chain in Fakfak start from nurseries, cultivation, collection, processing to marketing (Figure 1). Each of these activities there are actors involved; local collectors

and local enterprise. Local collectors are local people who have the capital to buy crops from small farmers. The yields purchased are still in the form of raw seeds and then sold back to inter-island traders in dried form.

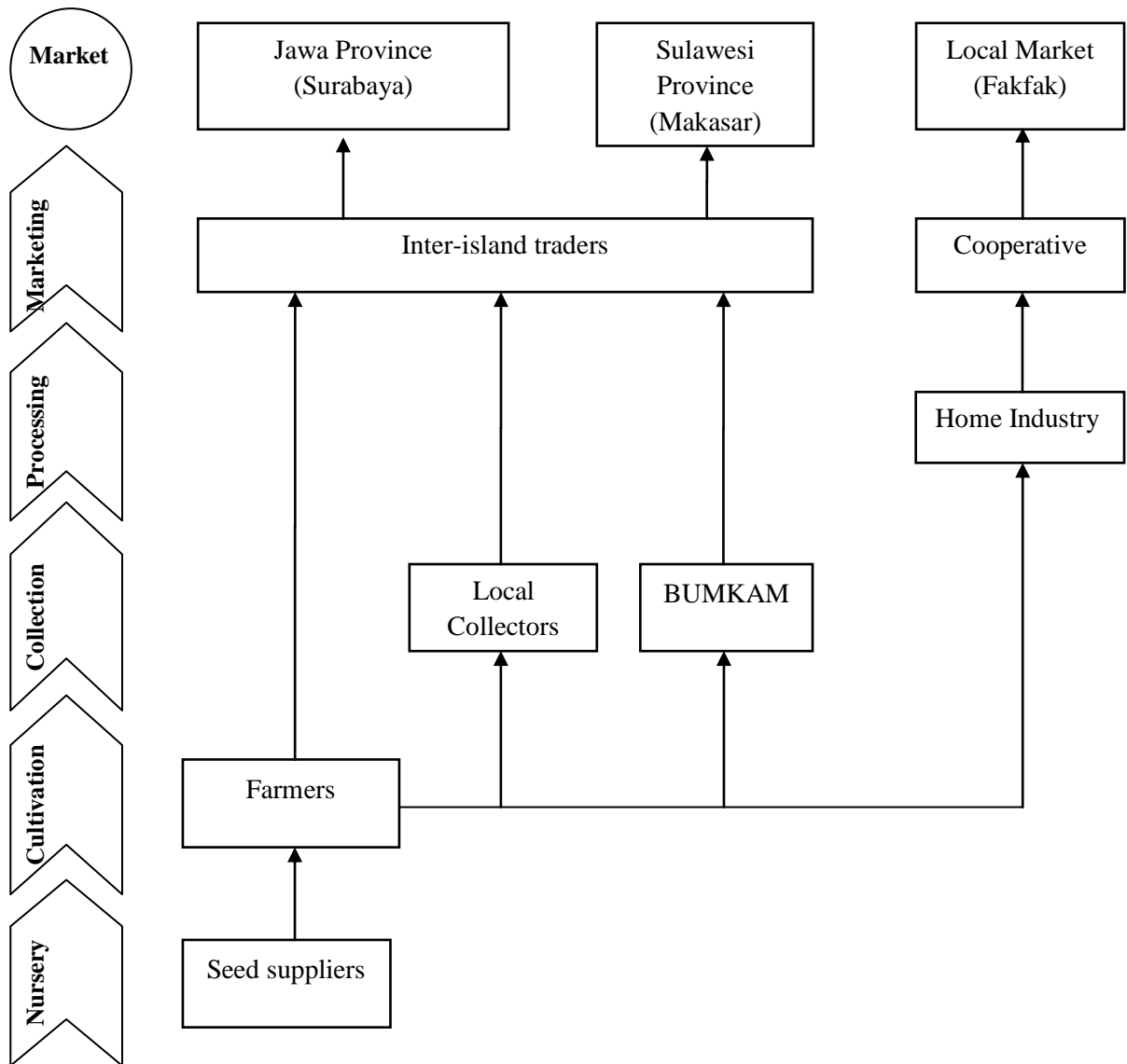


Figure 1. Value Chain Map of Nutmeg in Fakfak, Papua.

In Figure 1, the farmer actor has four marketing channels. Dry seeds and mace are sold to inter-island traders, while raw seeds are sold to local collectors or BUMKAM (village enterprise). The growth of the home industries that processes nutmeg meat today, results nutmeg farmers to sell fruit meat, so that it becomes an additional income for farmers. Nutmeg meat which is the biggest part of nutmeg (77.8%) is usually discarded after the seeds are taken (Sipahelut & Telussa, 2011).

Seed Suppliers

Seed suppliers are people who own nutmeg gardens and sell their seeds to farmers. Nutmeg seedlings, which are sold by suppliers are also purchased by local government agencies to be given to farmers as an aid in developing nutmeg production. Nutmeg seedlings are cultivated in polybags until they grow and have sturdy roots to be planted in farmers' nutmeg gardens. Seed suppliers sell one nutmeg seedling at a price range of IDR 10,000-15,000. Nutmeg spacing ranges from 7-10 meters between trees.

Farmers

Farmers' activities in cultivating nutmeg begin from planting, caring, harvesting to post-harvest handling. Nutmeg

cultivation activities are still classified as semi-cultivation, because basically nutmeg plants grow naturally starting from the coast to the mountains. Nutmeg can be harvested from the age of 7-9 years and when it reaches the age of 25 years, nutmeg can start producing fruit throughout the year (Fauziyah & Kuswantoro, 2015). Nutmeg production continues until the nutmeg plant is 70 years old. Nutmeg harvest season will occur three times in a year. Local people named the three harvest seasons as the west, east and sun harvest as shown in Table 1. The west harvest season tends to have more fruit production than the east and sun harvest season. In the west season, each farmer can produce a minimum of 20,000 raw seeds or 2 lasa in local mention (1 lasa = 10,000 raw seeds), but during the sun season, the production of nutmeg is at the lowest level.

Tabel 1 Harvest season of nutmeg in Fakfak

Season	Time	Farmer Range of Production
West	September – Desember	20.000 – 50.000 seeds
East	April – Juli	10.000 – 20.000 seeds
Sun	Februari – Maret	5.000 – 10.000 seeds

Nutmeg plants grow from the coastal location to the mountains, local farmers classify three types of nutmeg plants namely beach nutmeg, middle nutmeg and mountain nutmeg. Beach nutmeg is a nutmeg plant that grows in coastal areas, the characteristics of the fruit has a thick shell. Middle nutmeg is a nutmeg plant that grows in valleys or mountain slopes, with the characteristics of the fruit has a thin shell and thick mace. Mountain nutmeg is a type of nutmeg plant that grows in mountainous areas with characteristics of larger fruit and thick mace.

Farmers immediately separated the seeds and fruit as soon as the nutmegs were harvested. Raw seeds which include seeds and mace are immediately stored in containers, while the pulp is left in the garden. The reason farmers throw away or leave their fruit in the garden is because if the fruit is brought along, it will complicate the process of transportation. Yet, in small amounts there are farmers who use the fruit meat by selling it to the home industry to be processed into various derivatives of fruit meat products.

When the harvest arrives, some farmers also appoint farm laborers with a profit sharing system between the owner of the garden and farm laborers who are appointed. The percentage of profit sharing

of 50: 50 percent, in the form of raw seeds obtained. When harvesting the mountain nutmeg, farmers usually spend the night in the garden and make lodging camps on the mountain.

After the harvesting process in the garden is completed, the farmer brings the raw seeds to the farmer's house for the post-harvest handling process. Yield processing is carried out by family members of men and women together, splitting nutmegs, removing mace with nutmeg seeds, drying mace and seeds (UNDP, 2013). A container for drying made of wood and bamboo is placed parallel to the ceiling of the house.

The height of drying place is about 1.5 meters. According to farmers, drying is better with the method of origin because the temperature of the heat can be regulated rather than with sunlight which makes the nutmeg seeds can be contaminated with aflatoxins. It can trigger cancer cells if the nutmeg is consumed. In addition, nutmeg seeds can be crushed if dried too hot. Each farmer has different drying techniques, all derived from knowledge derived from their respective ancestors and there is no good standard of drying. This coarsening technique is used to obtain a maximum moisture content of 5% percent in the nutmeg.

The process of drying the seeds using *pengasaran* method is done for one week (UNDP, 2013). Not all seeds from the stems are sold all at one time. The tendency of dried nutmeg results from the staple is sold by farmers gradually by looking at the condition of the price of nutmeg in the market, so that dried beans can be stored like

savings that can be sold if there is a need. Dried nutmeg seeds have a shelf life of up to six months if they continue to be dried. Nutmeg seeds that are stored are still in the form of skin. Unlike the case with mace which tends to be easily damaged and cannot be stored for a long time, the mace is directly sold at one time.

Table 2. Traded nutmeg categories

Nutmeg	Description	Range of price
Raw seed	Fused seed	IDR 350rb – 400rb /1000 seeds
Skin seeds	1. Seeds that have been dried and in the flesh of the seeds have been separated from the shell so that when shaken it can be felt.	IDR 50 - 80rb / kg
1 <i>Goyang</i>		
2 <i>Tuli</i>	2. Seeds that have been dried but the flesh of the seeds and shell are not separated so that when shaken, they do not sound.	IDR 30rb - 45 rb / kg
3 <i>SS</i>	3. Is a mixture of <i>goyang</i> and <i>tuli</i> type seeds.	IDR 35rb – 75 rb / kg
Seed flesh (Knock)	1. The smooth flesh of the seeds does not shrink	IDR 80 – 110 rb / kg
No 1 (Super)	2. There are wrinkles in the flesh of the seeds.	IDR 30 – 80 rb / kg
No 2		
No 3	3. The flesh of the seeds is crushed.	IDR 15 – 30 rb / kg
Mace	The part that blends with the seeds when the fruit is peeled.	IDR 90 – 115 rb / kg
Flesh fruit	The biggest component in nutmeg which is generally not well utilized.	IDR 1.000 / kg

As shown in Table 2, to get the *goyang* seed category, it needs to be dried for one week and the seeds that are dried are in a mature condition. After that, categorizing into 1, 2 and 3 is necessary. Characteristics of the seeds that are ripe which has a black shell color. Shells that have white patches indicate the nutmeg is still young and farmers usually sell it directly in raw form. Nutmeg seeds that have white spots (raw) are not yet ripe when done drying, the flesh of the seeds becomes crushed and goes to quality number 3, causing low selling prices.

Local Collector

Local gathering activity begins to visit the farmers' gardens when entering the harvest period by motorcycle to buy the harvest from the farmers. The harvest is purchased from farmers in the form of raw seeds (seeds + mace). The unit of purchase of raw seeds is based on unit seeds at a price of around IDR 350,000 per 1000 seeds. This condition is very helpful for farmers in selling their products. On the other hand, sometimes the price received by farmers is lower than the market price (Fauziyah & Kuswanto, 2015).

After the raw seeds are purchased from farmers, local collectors carry out post-harvest handling as a process carried out by

farmers. Old seeds are put into the medium media, while young seeds are directly sold and are usually included in the *tuli* category (see Table 2), while mace is dried in the sun. Most local collectors have also been bound by inter-island traders so that they directly sell to inter-island traders who tie their relations. Some local collectors are also capitalized by inter-island traders to buy crops from farmers.

BUMKAM (village enterprise)

Its role is to buy commodity products from farmers such as seaweed, fish and also nutmeg. This institution was only established within 2 months when the data collection process took place. In nutmeg seeds purchased from farmers, their activities were sorting between old and young seeds, and also sorting of dried seeds to separate the *tuli* and *goyang* categories.

The price purchased by BUMKAM is higher than the price offered by local collectors, thus attracting farmers to sell to BUMKAM. In certain cases, the BUMKAM runs out of capital to buy crops from farmers. In addition, the BUMKAM sells the nutmeg to inter-island traders.

Inter-Island Trader

Inter-island traders are important actors in the nutmeg value chain in Fakfak district. The actor has market access related to the location of the shipment destination, buyers from outside the island and access to information related to the price and quality needed by the buyer for the production of nutmeg farmers. Inter-island traders have a partnership with exporters in Surabaya. Papua nutmeg is commonly used as a mixture with Banda nutmeg as an exchange.

The types of nutmeg seeds that are marketed are in the form of skin seeds (*goyang* and *tuli*), flesh seeds (numbers 1,2 and 3) and dried mace. Marketing is sent to Surabaya, Semarang and Jakarta and partly to Makassar. The number of inter-island trader actors in Fakfak District is ten actors involved. Generally inter-island trader actors are migrants who live in Fakfak district.

Skin seed is the main commodity traded compared to seed flesh and mace. This is because the flesh of the seeds has a great risk during the shipping process and is vulnerable to damage during storage such as super quality Number 1 can be contracted, so that it enters quality Number 2 when it arrives at the delivery location. Therefore, the seeds of *ketok* (knock) and mace are only sent in small amounts. Similarly, mace

cannot be stored for a long time, so that it can cause the color and physical condition to change. Nutmeg delivery by sea with seeds and mace is packed in a 20 feet container. One container may contain ten tons of nutmeg seeds.

Home Industry

Previously, fruit flesh was only a waste from the harvest of seeds and mace. But now, after the community learned the benefits and demand for processed products from fruit flesh increased, the home industry began to grow and develop. In addition, continuous training from local government agencies gave learning in processing of fruit meat products, adding to the knowledge of the industry. The products that are produced are already diverse ranging from wet-preserved nutmegs, dried-candied nutmegs, syrups, juice, candies. There is even a home industry that makes soy sauce from nutmeg. This soy sauce is sold through cooperative containers.

Cooperative

Cooperatives are a forum for home industry associations that facilitates processed nutmeg products to be marketed. The role of the cooperative is to market nutmeg products to tourists who come to Fakfak. Cooperative development is also

supported by the district government, banks and private companies.

CONCLUSIONS

The main activities of the Papua nutmeg in Fakfak district start from nurseries, cultivation, collection, processing to marketing. Value chain actors who involved are seed suppliers, farmers, local collectors, BUMKAM, home industry, inter-island traders and cooperatives. Each actor has a relationship with other actors. The nutmeg trade in Fakfak is classified into various types namely raw seeds, skin seeds, seed flesh, mace and fruit flesh. Seed flesh has the highest price in the nutmeg trade in Fakfak district. The seeds and mace are mainly marketed to Surabaya by sea transport. Nutmeg meat which has not been used optimally has the potential of home industry actors in increasing the values of processed nutmeg products.

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REFERENCES

- Andrianto, M. S., & Rahardja, S. (2017). Formulasi Strategi Pengembangan Agroindustri Pala Fakfak. *RISALAH KEBIJAKAN PERTANIAN DAN LINGKUNGAN: Rumusan Kajian Strategis Bidang Pertanian Dan Lingkungan*, 3(2), 55. <https://doi.org/10.20957/jkebijakan.v3i2.15514>
- Chagomoka, T., Afari-Sefab, V., & Pitoroc, R. (2014). Value chain analysis of traditional vegetables from Malawi and Mozambique. *International Food and Agribusiness Management Review*, 17(4), 59–86. <https://doi.org/10.5897/AJB10.2357>
- Dragan, I.-M., & Isaic-Maniu, A. (2013). Snowball Sampling Completion Irina-Maria Dragan, Alexandru Isaic-Maniu. *Journal of Studies in Social Science*, 5(2), 160–177.
- Elmendorf, W. F., & Luloff, A. E. (2006). Using key informant interviews to better understand open space conservation in a developing watershed. *Arboriculture and Urban Forestry*, 32(2), 54–61.
- Fauziyah, E. V. A., & Kuswanto, D. P.

- (2015). *PROSPEK PENGEMBANGAN PALA (Myristica fragrans Houtt) DI HUTAN RAKYAT*. 9(1), 32–39.
- Hellin, J., & Meijer, M. (2006). *guidel_valueChain*. (November).
- Lie, H., Rich, K. M., Kurwijila, L. R., & Jervell, A. M. (2012). Improving smallholder livelihoods through local value chain development : a case study of goat milk yogurt in Tanzania Improving smallholder livelihoods through local value chain development : a case study of goat milk yogurt in Tanzania. *International Food and Agribusiness Management Review*, 15(3), 55–86.
<https://doi.org/https://www.ifama.org/publications/journal/IFAMRArchive.aspx>
- M A'MUN, M. (2013). KARAKTERISTIK MINYAK DAN ISOLASI TRIMIRISTIN BIJI PALA PAPUA (*Myristica argentea*). *Jurnal Penelitian Tanaman Industri.*, 19(2), 72–77.
<https://doi.org/10.21082/littri.v19n2.2013.72>
- Musaad, I., Djuuna, I. A. F., & Attamimi, N. (2016). Land Characteristics and Their Relationship to Papua Nutmeg (*Myristica argentea* Warb.) Population in Fakfak Regency. *International Journal of Applied Environmental Sciences*, 11(4), 957–966.
- Sipahelut, S. G., & Telussa, I. (2011). Karakteristik Minyak Atsiri Dari Daging Buah Pala Melalui Beberapa Teknologi Proses Characteristic of the Essential Oil of Fruit Nutmeg By Some Process Technology. *Jurnal Teknologi Hasil Pertanian*, IV(2), 126–134.
- UNDP. (2013). *Kajian Pala dengan Pendekatan Rantai Nilai dan Iklim Usaha di Kabupaten Fak-fak*. 42.