



Prospects of Nutmeg Industry Development in North Maluku, Indonesia

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Abstract This study describes the nutmeg industry in North Maluku Province, Indonesia, and includes definition of its current state and potential development opportunities. Primary data was collected in April 2019 and in September 2023, through interview surveys of local government officials and farmer groups in the Ternate Regency, North Maluku Province. The results demonstrate that 1) The nutmeg industry is deeply rooted in its long history and the farmers' strong connections to local wisdom and culture which are more highly valued than typical economic drivers, 2) the high market demand for nutmeg products offers promising prospects for the development of the nutmeg industry should the local industry wish to move in that direction, 3) the existence of genetically diverse natural resources of North Maluku nutmeg strengthen position of the industry for future development, and 4) more modern and scalable production and distribution systems are mandatory for the future development of the nutmeg industry and to support it becoming a sustainable and leading industry in the province.

Keywords nutmeg products, spice island, local culture, rural development

INTRODUCTION

Nutmeg fruits in Indonesia are processed into many types of products, including nutmeg spices, sweets, and oil. Generally, nutmeg seeds and mace are used for spices and oil, while nutmeg flesh is processed into food and beverage products, including sweets, syrup, and juice. The Indonesian nutmeg industry grew rapidly between 2010 and 2019 with an average year over year growth of approximately 9.5 percent. Indonesia produced 40,653 tons of raw nutmeg fruits in 2019, (Pakpahan et.al., 2020). Indonesia now meets more than 66 percent of the total global market demand (Sukarman, 2021) and is currently the largest producer of nutmeg oil in the world, meeting 75% to 80% of the global demand (Van Aroma, 2023).

North Maluku is one of the primary nutmeg - producing regions in Indonesia with a total cultivated area of 35,419 hectares which contributes 24.22% of the total national production. Nutmeg production in North Maluku is centered on three main islands of the province, namely Halmahera, Ternate, and Tidore islands. Farmers in North Maluku mainly produce nutmeg fruits and process those raw materials into nutmeg spices. Farmers usually sell nutmeg spices in two types of products, i.e. dried nutmeg seeds and dried mace. Despite its potential natural resources, the nutmeg industry in North Maluku is not fully developed and the nutmeg distribution system has not been well-established. Farmers have limited access to the market which most of them sell nutmeg spices to rural assemblers without proper sales regulations. Hence, nutmeg commodities from North Maluku currently face two main issues, namely unstable quality control and unclear traceability (Sulistiono et al., 2022). Regardless of its potential development, information on the current state of nutmeg industry in North Maluku is still very limited.

OBJECTIVE

This study aims to describe the nutmeg industry in North Maluku Province, Indonesia, including definition of current state and its strengths, weaknesses, threats, and opportunities related to potential development of nutmeg industry in the province.

METHODOLOGY

Primary data was collected through sequential interview surveys of government officials from the Assessment Institute of Agricultural Technology (AIAT) of North Maluku Province representing the central government, officials from the Ternate City Agriculture Agency representing the local government, extension workers, and three farmer groups from Ternate City, North Maluku Province, Indonesia. The first interview survey was conducted using a semi-constructed questionnaire in April 2019 and sought to clarify the characteristics of nutmeg industry in North Maluku Province. The second survey was delayed due to the COVID-19 pandemic and was completed in September 2023 by conducting focus group discussion with government officials and leaders of the same three farmer groups visited during the first survey. This survey was mainly focused on collecting data on the current state of nutmeg production and distribution system in North Maluku, specifically questioning problems and challenges faced by local farmers. A SWOT analysis is applied to analyze the prospects of nutmeg industry development in North Maluku, specifically from farmers' perspectives, based on qualitative data collected during both interviews. SWOT stands for Strengths, Weaknesses, Opportunities, and Threats (Peterdy, 2023).

RESULTS

Characteristics of Nutmeg Production in North Maluku

Nutmeg cultivation in North Maluku is mainly conducted by family farmers in mixed-cropping home gardens or agroforestry lands where they combine nutmeg with other crops such as clove, coconut, cacao, and other horticulture crops (i.e. vegetables, fruits, and medicinal plants). Currently, there are 1,893 family farmers in Ternate Regency with a total production area of 1,975 hectares (North Maluku Provincial Agriculture Agency, 2023). Table 1 shows production of fresh nutmeg fruits by area in 2021.

Table 1 Production of nutmeg fruits in North Maluku by regency/municipality (2021)

Regency / Municipality	Production (ton)	Productivity (kg/ha)
West Halmahera	653	560
Central Halmahera	1,831	435
Sula Islands	89	220
South Halmahera	608	418
North Halmahera	1,852	560
East Halmahera	184	123
Morotai Island	102	278
Taliabu Island	104	377
Ternate	326	324
Tidore Kepulauan	314	400
North Maluku	6,062	419

Source: Ministry of Agriculture Directorate General of Estates (2023)

Moreover, nutmeg cultivation in North Maluku is strongly connected to the local wisdom and culture that passed through generations, tracing back to the long historical background where tradition of nutmeg production in the community has begun since the 14th century. Hence, for years land management has still continued to be conducted in community-based system where farmers share knowledge and use tools collectively as communal property (Sidayat and Fatmawati, 2019).

Meanwhile, nutmeg processing in North Maluku is focused on spices production. As mentioned in above Introduction, generally nutmeg fruits in Indonesia are processed into spices, oil, and foods and beverages products, such as sweets, syrup, and juice. Hence, farmers in North Maluku mainly process nutmeg fruits into nutmeg spices and sell them in two types of products, i.e. dried nutmeg seeds and dried mace. There are some farmers who process nutmeg fruits into sweets and syrup, but generally food and beverages are still limitedly processed for family consumption.

To escalate the Indonesian agricultural industry, the central government launched the 5-year Strategic Plan of the Ministry of Agriculture 2020-2024 that aimed to increase productivity and efficiency through research and development (R & D) and technological innovation in order to achieve a developed, sustained, and modern agriculture in Indonesia (Secretariat General of Indonesian Ministry of Agriculture, 2021). The strategic plan includes farm rehabilitation and production expansion of high-value commodities, that is hoped not only to boost national production but also to improve farmers' livelihood as source of income. Thus, as one of the targeted high-value commodities from the central government, the strategic plan for nutmeg industry is implemented in five main producing areas, including North Maluku, Maluku, Aceh, Papua, and North Sulawesi.

In North Maluku, the above strategic plan is specifically focused on expanding nutmeg cultivation areas and increasing productivity. The interview survey to the AIAT and Ternate City Agriculture Agency clarified that the strategic plan consists of providing seeds, fertilizers, tools, and necessary assistance for farmers in target areas. In order to supply high quality seeds, the local government began the strategic plan by identifying high yield block (HYB) and selected parent trees (SPT) under the assistance of AIAT. Then, selected farmers are assigned to become seeds breeders to provide necessary seeds for farm rehabilitation and expansion programs. Currently, there are nine nutmeg varieties in Indonesia certified as superior seeds by the Ministry of Agriculture, of which five varieties are originally indigenous nutmeg seeds from the North Maluku region, namely *Ternate 1*, *Tidore 1*, *Tobelo 1*, *Makian*, and *Patani*. However, due to the small land size and limited areas available at Ternate Island, currently, the expansion program is mainly implemented by farmers in Halmahera Island. On the other hand, farmers in Ternate Island are encouraged to become seeds breeders for supplying seeds to Halmahera Island. These implementation efforts were then legalized by the issuance of the Ministry of Agriculture Decree in 2022 that divided nutmeg development in North Maluku into the following directions; firstly, targeting Ternate and Tidore Islands for conservation of superior seeds and parent trees, and secondly, targeting Halmahera Island for conservation and expansion. In 2022, the Ministry of Agriculture distributed 200,000 nutmeg seeds to two areas in Halmahera Island, namely North Halmahera and South Halmahera for land expansion.

Current State of Nutmeg Distribution System in North Maluku

In general, nutmeg spices produced in North Maluku are mainly distributed to the international market. The second interview survey clarified that the distribution system for nutmeg spices starts from farmers level, where farmers conduct the following production processes: cultivation, harvesting, selecting and drying nutmeg seeds and mace. Then nutmeg spices will go from farmers to the market through the following distribution channels, namely rural assemblers, regency assemblers, regency processors, and domestic manufacturing and trading companies. Farmers explained that this distribution channel has actually been conducted for centuries. Although farmers are aware that they can get higher prices if selling directly to buyers at a regency level than selling to rural assemblers, there are two reasons why they still choose to sell to rural assemblers: trust and convenience. Rural assemblers are usually people among farmers themselves who play roles in gathering nutmeg spices from surrounding farmers in the same village. Then, the rural assemblers will collectively distribute these products into bigger assemblers in the regency, called regency assemblers. Most farmers have a very strong connection and trust with rural assemblers because those assemblers are basically fellow farmers from the same village. Hence, selling to rural assemblers is easier and can cut farmers' transportation cost instead of bringing them directly to the

market. Meanwhile, the interview survey also revealed that many rural assemblers conduct “pre-payment”, which they pay for the products in advance before harvest season begins. Although this practice can be helpful for farmers who are in need of cash money for their daily expenses, unfortunately it can also tie farmers and limit their access to sell to other potential buyers. Currently, the selling price of dried nutmeg seeds and dried mace at the regency level are 90,000 IDR and 225,000 IDR per kilogram, respectively.

On the other hand, the regency assemblers, who usually own a warehouse in the regency’s central market or near the port, will distribute nutmeg products to two types of buyers, namely regency processors or domestic exporters, depending on their connection and transaction deals with the target buyers. Regency processors are the ones who directly process dried seeds and make them into packaged products, while domestic exporters usually play both roles as domestic manufacturers and trading companies. Lastly, the exporters will ship nutmeg species through trading ports and sell them to the international market. For North Maluku, although nutmeg production is conducted on three islands, i.e. Ternate, Tidore, and Halmahera, nutmeg spices will first be transported to Ternate Island where it is equipped with proper infrastructures, such as an airport and shipping ports. Hence, those spices will be distributed from Ternate Island into warehouses of exporting companies that are mainly located in three official trading ports in Indonesia, namely Surabaya in East Java, South Sulawesi, and North Sulawesi. Figure 1 shows the illustration of nutmeg distribution system in North Maluku.

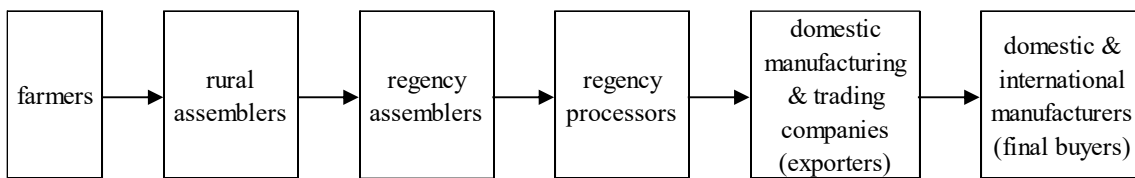


Fig. 1 Nutmeg distribution channel in North Maluku

DISCUSSION

SWOT Analysis on Prospects of Nutmeg Industry Development in North Maluku

The previous section summarized the current state of nutmeg production and distribution system in North Maluku. In this section we conducted SWOT Analysis by elaborating information gathered during interviews and categorizing them into four aspects, strengths, weaknesses, threats, and opportunities to describe the prospects and challenges for the development of nutmeg industry in North Maluku. Figure 2 summarizes the four aspects based on the SWOT Analysis.

In terms of strengths, nutmeg production in North Maluku is strongly favored by the rich natural resources and large areas of cultivated land. As mentioned above, currently five indigenous varieties originally from North Maluku have been classified as superior seeds by the Indonesian Ministry of Agriculture. The field survey and interviews with farmers highlighted potentials of more varieties existing in the North Maluku forests, which farmers believe to be different from other varieties that have been certified by the Ministry. Hence, this knowledge and local wisdom preserved in farmers’ communities can be considered as important sources of information that may lead to the discovery of new potential raw materials for the nutmeg industry, which in advance requires a thorough empirical study. With the support and assistance of the local government and research institutions, technical training and knowledge sharing can be actively promoted to provide opportunities for exchanging valuable information with local farmers. Having a vital position as the origin of nutmeg with genetically diverse varieties, combining local knowledge and wisdom preserved in farmers’ community with a comprehensive empirical study is important to unfold potential nutmeg resources in North Maluku.

In terms of weaknesses, three aspects can be identified as limitations of nutmeg industry development in North Maluku, namely limited knowledge and technology application at the farmers' level, low productivity, and long distribution channels. As mentioned above, currently

most farmers in North Maluku process their nutmeg fruits into nutmeg spices. The processing of nutmeg spices in farmers' level consists of harvesting fruits, separating flesh, and drying seeds and mace to make nutmeg spices. However, these processes are mostly conducted in traditional ways without high technology. Farmers harvested fruits and separated each part manually then sun-drying seeds and mace naturally outside their houses. Some farmers have built drying racks to preserve the quality of dried seeds and mace, but many are still drying on the sheets that lay on the road in front of their houses. Since all the processing steps are still conducted manually, nutmeg spices produced are assumed to be less than available resources when compared to the scale of cultivated land, hence productivity is considerably low. Moreover, the long distribution channels are also identified as a weakness in the development of nutmeg industry in North Maluku. Many farmers are still relying on rural assemblers, especially with the current "pre-payment" practice that is also limiting farmers from finding new buyers. Moreover, with no information on what is going on in the nutmeg market outside their producing areas, farmers have no idea of the value of their products. Hence, farmers tend to stay in stagnant conditions and have no courage to improve their production and distribution system for higher productivity and better bargaining positions in sales.

Strengths	Opportunities
• Rich natural resources • Potential raw materials • Historical & cultural assets	• Sustainable production • Products diversification • Increasing market demand
Weakness	Threats
• Limited knowledge and technology implementation in farmers level • Low productivity • Long distribution channels	• Quality problems • Price drop • Export restriction

Fig. 2 SWOT analysis of the nutmeg industry in North Maluku

In terms of opportunities, there are three aspects that can be considered as advantages for the development of nutmeg industry, namely sustainable production, product diversification, and increasing market demand. Considering potential natural resources such as large cultivation areas and the existence of diverse varieties, North Maluku is a very prospective region to achieve sustainable nutmeg production. Currently farmers may still focus on producing nutmeg spices which only use seeds and mace from the nutmeg fruits and throw away the flesh. However, with proper knowledge and technical training, farmers can get information on quality improvement and product diversification. Those thrown away flesh have already been processed into foods and beverages but still limited for family consumption. Information on the prospective market for these nutmeg foods and beverages can encourage farmers to try processing different products, hence expanding their production and opening market opportunities for various nutmeg products. At this moment, the local government of Ternate has initiated the establishment of a souvenir shop in the city center. Although it only comes from two producers, some nutmeg foods and beverages such as candy, juice and syrup that are made from the flesh have been exhibited and sold at the shop. Meanwhile, seeing the current trend where Indonesia is serving as the largest nutmeg oil producer and supplying 66% of the total global market demand, it is foreseen by the AIAT that the international demand for Indonesian nutmeg products may also increase in the future considering more industries (e.g. cosmetics and medicines) are using chemical compounds derived from nutmeg as raw materials. Hence, trends in both domestic and international markets can be prospective opportunities for the development of the nutmeg industry.

Conversely, the development of the nutmeg industry in North Maluku faces several threats that must be taken into consideration. For years, quality management has been the largest issue in expanding sales of Indonesian nutmeg. As an export commodity, Indonesian nutmeg products must meet the quality requirements mandated from the international market. The government of

Indonesia has set quality standards and regulations for nutmeg products at both the local and national levels to address the quality problems. However, the quality regulation system has not been effectively functioning at any level. A study by AIAT in 2022 confirmed that the current nutmeg seeds and mace drying process of using open sunlight is still inappropriate and can affect the quality of the products. This inappropriate process may then result in a domino effect on the distribution channels. Once the nutmeg seeds and mace are not completely dried and/or if they are partly damaged, they can cause fungi contamination to other products when kept in the same storage. Furthermore, the current rural level distribution system in North Maluku, demonstrates that farmers may sell to specific rural assemblers which can be traced to the source farmers for assuring the production quality. However, once the nutmeg products are distributed to regency and other distribution channels, it will be mixed with products from many farmers and traceability of the products becomes unclear. Without proper quality control from local authority, specifically in regency level, the quality problems seem to remain unsolved, and traceability will remain unclear. Hence, if the quality issue continues, it can further lead to price drops and export restrictions from international markets thus limiting potential expansion of the nutmeg industry in North Maluku.

CONCLUSION

This study explained the current state of the nutmeg production and distribution system in North Maluku and analyzed the prospects and challenges of nutmeg industry development in North Maluku using SWOT Analysis. The results demonstrate that 1) the nutmeg industry in North Maluku is deeply rooted in its long history and the farmers' strong connections to local wisdom and culture which are more highly valued than typical economic drivers, 2) the high market demand for nutmeg products offers promising prospects for development of the nutmeg industry should the local industry wish to move in that direction, 3) the rich and genetically diverse natural resources of North Maluku nutmeg strengthen position in the industry for future development, 4) however, more modern and scalable production and distribution systems are mandatory for the future development of the nutmeg industry and to support it becoming a sustainable and leading industry in the province. Hence, actively exchanging information with farmers community through knowledge sharing and technical training becomes essential to build strong relations between farmers and related key players, including local government and research institutes. As export commodities, the market demands a sustainable supply of high-quality nutmeg products, thus collaboration among related parties to establish a proper management and control system on production and distribution in the producing areas under legal entity, e.g. Farmers Corporation or Regionally Owned Enterprise (BUMD) should be seriously considered for future development of nutmeg industry in Indonesia.

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