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The Philippines in the Mango Global Value Chain[1]

Highlights

- *Global mango production has grown rapidly over the past ten years, from US$696 million (in value) in 2005 to nearly US$2.1 billion (in value) in 2015 (UN Comtrade, 2016).*
- *The mango industry in the Philippines serves as an important source of livelihood for around 2.5 million farmers (PCARRD-DOST, 2011).*
- *The Philippines' participation in the mango GVC is in the export of processed mango wherein 85 percent of its overall production is sent to the export market.*
- *In 2015, the country ranked 7th among exporters of fresh and dried mangoes and took up almost 4 percent of share (US$91 million in exports) in the global market (UNComtrade, 2016).*
- *Despite the Philippines' favorable climate conditions, its exports of mango products have been declining in recent years because of difficulty in meeting strict SPS requirements in major markets.*

The Mango Global Value Chain

Mango trees thrive primarily in Asia, Latin America and Africa due to the warm tropical and subtropical climates. The major mango producing countries include India (42%), China (10%), Thailand (7%), Indonesia (5%) and Mexico (4%) (FAO, 2016). Previously, mango products were consumed locally and limited trade existed. However, trade in mango products have risen for the past 10 years, amounting to almost US$2.1 billion in total exports in 2015 (UN Comtrade, 2016). As a result, mango prices in the global market have declined, encouraging developed countries to include mango products in their diets. The characteristics of the mango global value chain (GVC) are presented below:

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[1] Condensed from the April 2017 study on "The Philippines in the Mango Global Value Chain" prepared by the Duke University Center on Globalization, Governance and Competitiveness (Duke CGCC) on behalf of the USAID/Philippines, through the Science, Technology, Research and Innovation for Development (STRIDE) Program.

Global demand for mangoes is increasing.

The nutritional characteristics of the mango contribute to its growing demand. Particularly, there is an elevated demand for "ready-to-eat" mangoes and processed products such as dried or pureed mango.

Few countries have been able to penetrate the global market.

Despite growing mango production, some countries have not been able to sustain or participate in the GVC due to failure in meeting Good Agricultural Practices (GAP) and Sanitary and Phytosanitary Standards (SPS) requirements for global markets. The lack of logistical and commercial infrastructure that would support the requirements of large buyers is also a limiting factor.

Trade in fresh mango is more regional in scope, while dried mango trade is more globally oriented.

Fresh mangoes that are imported into the United States and Japan are sourced from their neighbor countries. For instance, US imports are mainly from Latin America – Mexico, in particular.. Japan's imports on the other hand, are from Thailand, Taiwan, and the Philippines. On the contrary, trade in dried mangoes is unconstrained by geographic location; shifts in supplier occur as countries advance their capabilities.

The global mango sector operates as a buyer-driven value chain.

Large supermarkets act as the main actor involved in the sale of fresh mangoes in key export markets (National Mango Board, 2015). In the past two decades, these establishments have influenced how fresh mangoes are produced, cultivated, harvested, transported, processed, and stored.

Mango producers and processors face a complex system of standards.

Consumers of mango products are increasingly seeking more information on how their food is produced. Thus, higher standards are being established at the national, regional and international levels.

The Philippines in the Mango Global Value Chain

The Philippines has been a significant player in the global export of mangoes since the 1980s. The country supplies about 10 percent of the world's fresh and dried mango exports (FAO, 2016). The leading major export destinations in 2015 include US (24 percent), Hong Kong (17 percent), Republic of Korea (13 percent) and Japan (12 percent) (UN Comtrade, 2016).

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Figure 1 illustrates the Philippines' participation in the mango GVC. Generally, the country is involved in the production and processing stages of the mango GVC. Its fresh mango exports are limited because of constrained capability in cold chain management, packaging and pre-export SPS treatments. Such issues prevent exporters from meeting the standards imposed in major markets.

Mango production in the country is characterized by small-scale farmers with an average farm size of 1.34 hectares. Production occurs throughout the country, with Luzon in the leading position, followed by Mindanao, then Visayas.

The Philippines' most important contribution is in the processing segment. Processed mango exports amounted to US$91 million in 2014, with dried mango occupying the largest share at 77 percent; followed by mango juice at 9 percent, airtight and puree mango at 8 percent and 7 percent, respectively (Philippine Statistics Authority, 2007-2014). Fruit quality is less of an issue for the processing segment. Moreover, destination markets do not demand restrictive SPS requirements typically imposed on fresh mango exports.

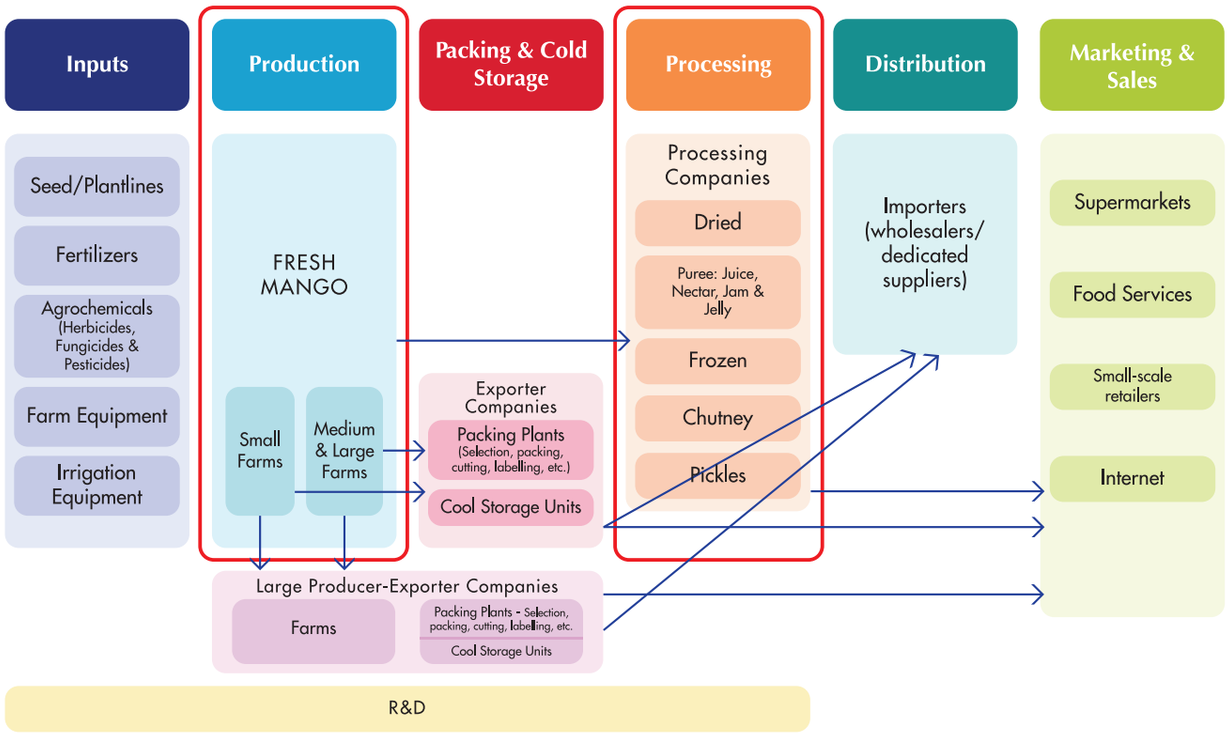

Figure 1. Philippines' Participation in the Mango GVC

The Philippine mango sector is overtaken by local buyers who, due to their economies of scale, dictate the prices of fruits being sold by local producers (Field Research, 2016). In 2014, about 66 companies were exporting processed mango, including dried, puree, airtight, and juice; around 70 percent of these are small and medium-sized that export less than US$500,000 in value. Processors of dried mango are mostly based in Cebu, while processors of other mango products are based in Cebu and Metro Manila (Briones et al., 2013). The Philippines' leading processors are Profood, M'Lhuillier Food Products, and FPD Food International.

Advantages

The Philippines has three major advantages in the mango GVC:

Superior quality variety.

The country's main strength is its ability to sustain the growth of "carabao", a high-quality variety of mango that is considered one of the finest and sweetest in the world.

Ideal climate conditions.

The Philippines (in particular, Luzon) has the ideal climate condition for growing mango. The relatively cool dry season with high heat accumulation during the flowering and fruit development period is an extreme advantage since mango production is highly sensitive to fungal diseases that result to production losses.

Strong drive among domestic processors.

Lead processing firms in the country have exerted efforts to advance productivity increases and accomplish programs and initiatives through strong lobby activities.

The Philippines has three major advantages in the mango GVC: Superior quality variety; Ideal climate conditions; and Strong drive among domestic processors.

Challenges

To be able to benefit from the strengths highlighted above, the Philippines' mango industry will also need to address some constraints faced at the farm level, issues in postharvest and certifications, as well as strengthen the coordination of value chain actors. Other challenges include:

Lack of scale economies at the production level.

Processors depend on small-scale, non-commercial producers to supply raw materials. This makes it difficult to meet the scale economies needed to deliver to clients abroad as global buyers tend to favor suppliers that can consistently and reliably deliver on time, price, and quality.

Lack of modern production and harvesting techniques.

The limited knowledge of available technologies, lack of formal training or education, and lack of financing, compel farmers to continue producing mango with outdated agricultural techniques and poor management. A study (Briones et al., 2013) also notes that technology use in large-scale agribusiness firms is likewise below the level of competitor countries such as Mexico and Peru.

Poor Post-Harvest Management and SPS Control.

The country lacks the capacity to comply with quality and SPS standards because of some flaws in the cold chain system, poor SPS management, and lack of packing skills. Poor cold chain management across the agricultural sector is a severe limitation for participation in exports, most especially for those farthest from provincial capitals and centers.

The country lacks the capacity to comply with quality and SPS standards because of some flaws in the cold chain system, poor SPS management and lack of packing skills.

Furthermore, there is a need for handling and packaging equipment as well as trained graders in sorting and proper handling. As a result of poor post-harvest management and SPS controls, post-harvest fruit damage and rejection rates climbed up to 50% (Field Research, 2016).

Lack of coordination between industry stakeholders and high levels of bureaucracy.

The lack of coordination is evident in the duplication of services among multiple government agencies. In addition, the implementation of national strategies is lopsided due to the ability of the local government to be selective on recommended initiatives. Furthermore, the high cost of bureaucracy also limits the access to information, training and financial resources (Field Research, 2016).

Upgrading: Lessons for the Philippines from Global Experiences

Despite the Philippines' success in its participation in the processed mango category, the rising global demand calls for a more competitive mango industry that can withstand competition from the rising production and upgrading being undertaken in countries such as Mexico, Peru and Thailand.

Process upgrading emerges as a dominant strategy in generating higher value for products and ensuring a market position in the mango GVC. Process upgrading involves the introduction of new technology and procedure to enhance productivity and quality of products. This strategy not only increases the yield but also helps in fulfilling the SPS standards imposed in key markets.

The potential upgrading trajectories of a country, however, highly depends on its relative position in the value chain along with other factors such as infrastructure, business environment, trade and investment policy, and governance structure

of the chain (Bamber et al., 2013, Gereffi et al., 2005). Hence, it is worthwhile to consider looking into the upgrading paths pursued by other countries that are at a similar level of development as the Philippines. Below are some examples of successful upgrading in the mango GVC:

- **Mexico** engaged in process and product upgrading. It is the largest world producer of fresh and dried mango, and the leading provider to the US due to its compliance with high SPS standards.

  Policy intervention in Mexico includes the adoption of modern agricultural technique that allowed them to diversify the types of mangoes produced and at the same time, increase their productivity. The country also obtained important certifications such as the GlobalGAP[2] to facilitate the growth of their exports and demonstrate the quality of their produce.

  The Philippines can learn from Mexico's experience in terms of adjusting cultivation practices in order to meet market standards. The cultivation of mangoes in consideration of the GAPs recommendation and meeting all United States Department of Agriculture (USDA) requirements are major factors in Mexico's competitiveness. The country is also performing well in determining shifts in market demand. For instance, offering an upgraded product such as the organic mango that caters to the needs of health-conscious consumers.

- India is the largest producer of mango in the world but is also constrained by low productivity, similar with the Philippines. As a response, the country pursued functional upgrading through government interventions and financial assistance in post-harvest handling and research and development with strong focus in its exports.

  The Philippines can mirror the top-down policy approach of India that heavily focuses on productivity improvement through the reduction of crop losses, and investing in research and development. Given the limited

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Source: Piñata Farm

[2] GlobalGAP is one of the most widely adopted standards. This standard was first developed in Europe in 1997 by an association of European fresh produce importers and retailers, and principally concerns pesticides and chemical use as well as the environmental impact of farming systems. US retailers began to adopt this standard for fresh produce in 2008 (GlobalGAP, 2008)

resources at the farm level, the Indian government has established research institutions that can lead the production of plant materials, introduction of new technologies, rejuvenation of mango orchards and conduct trainings for farmers. Moreover, India is also aiming to achieve functional upgrading by providing a favorable investment environment for processors.

Potential Upgrading Trajectories

The Philippines can continue to increase its participation in the global mango industry by capitalizing on the prominence of its mango products. However, it is crucial for the country to undertake the following upgrading trajectories:

Short to Medium Term: Product and Process Upgrading (agriculture).

Mango productivity is declining in the country; hence, process upgrading will help improve yields and production. Poor economies of scale and inability to implement good agricultural practices limit the country's ability to remain competitive.

Good agricultural practices, trained farmers and modern agricultural techniques are needed in order to meet global standards. In the case of local companies, it is necessary to have access to enough raw materials to meet all their commercial obligations. This type of upgrading will require improved coordination among farmers and processors, to have a consistent supply of materials and continue the expansion of mango products. Further, the country should invest in research and development (R&D) to improve the variety of mangoes, increase productivity and extend their seasonality.

Short to Medium Term: Product Upgrading (agriculture).

The Philippines has an opportunity to expand the exports of fresh mango in both regional markets and developed country markets. However, the products should be free from pests and diseases and have low chemical levels. Such changes should be implemented in the short term as it would take at least three years to free orchards from traces of chemicals and be classified under organic production. Organic mangoes earn twice the price as conventional mangoes; these have the potential to increase export revenues.

Along with improving the country's productivity and output, there is likewise a need to strengthen the capabilities in the packaging and cold storage stage of the chain.

Medium Term: Functional Upgrading (packing, cold storage, SPS controls).

Along with improving the country's productivity and output, there is likewise a need to strengthen the capabilities in the packing and cold storage stage of the chain. This step will entail major improvements in terms of skills, capital investments in cold storage equipment and coordination with firms offering the necessary treatments such as Hot Water Treatment (HWT) to enter major export markets.

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