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### **Multi-layer distribution system of Indonesian fruit-vegetable sector: Current challenges and future perspectives**

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#### **Introduction: Indonesian agriculture at glance**

Indonesia, an archipelago in South East Asia, has a total of 237 million inhabitants (BPS, 2011). Out of 100.8 million ha of area suitable for agriculture, 32 million ha are not yet utilized (Eugenia, 2010). Fruit and vegetable production in Indonesia is seasonal, grown mostly in individual family's garden, and sold mainly to local markets and big cities nearby. Only a small amount is exported to neighboring countries, such as Singapore and Malaysia. Main fruit and vegetable crops are, among others, mango (*Mangifera indica*), papaya (*Carica papaya*), rambutan (*Nephelium lappaceum*), pineapple (*Ananas comosus*), banana (*Musa acuminata*, *Musa balbisiana*), chili, yard-long-bean, shallots, cabbage, tomato and cucumber (Ministry of Agriculture, 2008). In 2011, the fruit production was growing by around 17%, while the vegetable was by less than 1% (BPS, 2012). Export tends to decrease and import is increasing (Maulana and Sayaka, 2007).

#### **Problem statements**

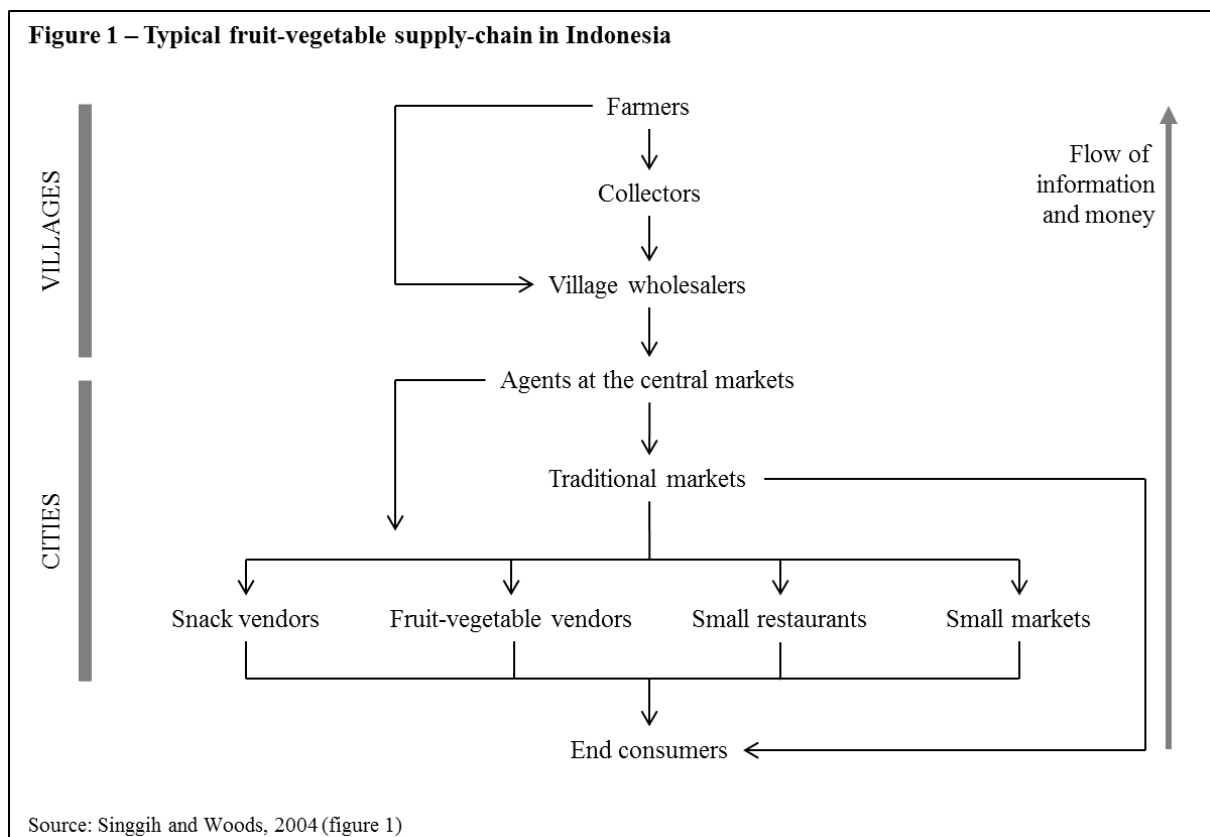
Local fruits and vegetables agribusiness faces a tremendous threat from imported ones. In the market, local fruits and vegetables products have a big difficulty to compete with imported goods. Nowadays, a high share of fruit-vegetable (80% of fruit and 20% of vegetable) sold through supermarkets are imported, particularly from China and Thailand, as they are usually cheaper and of higher quality than products produced by local farmers (World Bank, 2007). On one side consumers are increasingly demanding for better quality, better accessibility and availability of products. But on the other side some inefficient business practices are still dominating the local fruits and vegetables sector. One of these impractical systems, important to be mentioned, is concerning with multi-layering distribution system. Such system has been applied in Indonesian markets for decades. At that time such multi-layer distribution had some advantages, namely almost all of locally produced fruits and vegetables could be better distributed to other villages and throughout regions of the island. Due to a lack of financial capacity, farmers could not distribute their products without the help from local and individual distribution agents. Such small individually operated agents played a significant role in spreading the products. But unfortunately, this multi-layer system does not cope with current market development any longer.

Apparently, this system is no longer suitable with the changes of consumer's demand and also with the shift in the retailer structure. The supply chain of the fruit-vegetable sector experiences a shift from a traditional chain ('wet-market' with a focus only on local market) to a modern one (modern retail and supermarket). Big retailers such as supermarkets are gradually shifting from traditional supply channels to preferred suppliers, which can deliver products in high volume and consistent quality (Bijman and Ton, 2008). Supermarket expansion presents agricultural growth's opportunities in the small farm sector (Rao, Brümmer, and Qaim, 2012) and Indonesian retailers see a large opportunity for local produce in supermarkets if these supply chain problems could be resolved (World Bank, 2007).

Realizing some problematical issues of the current multi-layer system and the importance to establish a more resilient system, this article aims to (1) identify and observe the multi-layer distribution system, especially for Indonesian fruit-vegetable sector, and (2) to explore some possible alternative solutions for a more effective and efficient fruit-vegetable supply-chain. The complete picture regarding multi-layer distribution system will be depicted in the following section.

### Current multi-layer distribution channels: advantages and weakness

The distribution of fruit-vegetable from farmers to end-consumers in Indonesia typically involves at least five intermediaries, namely collectors, village/local wholesalers, agents at central markets, traditional markets and retailers such as fruit-vegetable vendors, small restaurants and small markets. An example of typical fruit-vegetable supply-chain pattern can be found in figure 1 below.



As mentioned above, a multi-layer distribution system might be helpful for small farmers to market their products. Additionally, it could also, to a certain extent, provide employment

opportunities for individuals to act as agents. However, in comparison to those advantages, the disadvantages of such a system under the current market trend are greater. Multi-layer distribution system has several disadvantages related to the risk of products' quality reduction, higher transaction cost, more advanced technical requirements, more limited information flow, and information asymmetry. Each of those disadvantages will be explained further in the next paragraphs.

Such a long distribution channel is particularly problematic since fruit-vegetable products are perishable and thus very vulnerable. The longer the chain is, the higher the risk that products' quality is reduced. Aside from that risk, it is more costly to maintain the freshness (or quality) of the products through a long distribution channel than through a short one. This transaction cost will further influence the competitiveness of products and farmers well-being. If the distributors are to maintain their profit margin, then to cover up the high transaction cost they will need to either increase the selling price (lowering the competitiveness of products at the market) or press down the purchasing price (at the end putting more pressure to farmers).

To maintain products' quality, good storage and transportation facilities are essential. Currently, though getting better at some aspects in some regions, the existing storage and transportation facilities are still relatively poor (particularly at the upstream, where villages are not always connected with adequate road infrastructure). Cool-storage and trucks are still not widely implemented yet. Such facilities are not affordable by small farmers and thus, only large enterprises (wholesalers and supermarkets) are increasingly using such facilities to maintain their products' quality. However, as the demand shifting, it is certainly necessary for farmers as well as other relevant supply-chain players (such as collectors, agents, etc.) to response to the market demand and to adjust their technology and management system accordingly.

Multi-layer distribution channel without good information system has led to poor information flow and information asymmetry among players within the supply chain. Each player seems to have information only from its direct upstream and downstream clients. Information about end-consumers preferences, for example, will likely not reach the farmers, and hence, it hinders the farmers to quickly adapt to the changing of demand. Additionally, small farmers are mostly low-educated and do not have the capacity and initiative to obtain such information. As a result, their market access tends to be limited to the existing buyers and likely to be very dependent on them.

Furthermore, information asymmetry (lack of knowledge about latest price, demanded quantity and desired quality) has led farmers to have relatively low bargaining power. Since fruit-vegetable is perishable, at harvest time farmers will tend to be price-takers to avoid keeping products unsold and perished. In terms of quantity, small farmers are especially difficult to fulfill larger demand since they usually operate individually. This fact makes large-buyers reluctant to do business directly with them and buying through agents, wholesalers, or importing instead. Knowledge about quality requirements is also lacking and it prevents the farmers to get a good price for their products.

## **Future perspectives**

In order to face the current challenge, some options can be proposed to increase the supply-chain's efficiency.

### *Contract farming and direct collaboration with modern-supply-chain players*

Contract farming is a contractual agreement (oral or written) between farmers and other firms, specifying one or more conditions of production and marketing for an agricultural product, which

is non-transferable (Rehber, 2007). Contract farming allows purchasing firm to gain control over the production and farmers may have assurance of marketing their products. Contracting between producers and processing or marketing agribusiness is one method to strengthen vertical coordination in the agrifood chain (Bijman, 2008). The rise of supermarkets in food retailing may accelerate the expansion of contract farming and the tendency for direct collaboration with modern-supply-chain players in developing countries. Such an arrangement has been implemented in some areas, for example the collaboration between mango farmers with Bimandiri (direct intermediary to Carrefour) and (water)melon farmers with marketing agribusiness in Central Java (Rusastra, 2006; Saptana et al., 2006).

#### *Reposition of the existing cooperatives network*

The cooperatives network needs to be repositioned if it is to function efficiently. Unlike the ideal form of cooperative, the existing agricultural cooperatives in Indonesia have failed to act like business enterprises, independently serving the needs of their members. Perpetual government intervention has caused most cooperatives in Indonesia to be lacking of self-reliance and led to society's misconception that the establishment of a cooperative is merely a mean to obtain government assistance. The management performance of the majority of cooperatives remains poor (Suradisastra, 2006). They will not have the intention to establish a cooperative, unless the government allocates financial aid (Siagian, 2005). Furthermore, fruit-vegetable industry needs to get more attention from cooperatives since so far it only received little attention from the government.

#### *Creating producer organizations*

Producer organizations (POs) have been acknowledged as key actors in agricultural development (World Bank, 2008). Collective action will strengthen the bargaining power of smallholders, reduce transaction costs, and give them a voice to be included in determining the policy. Thus, POs will strengthen the position of smallholders. Unlike medium and large farmers have relatively many alternatives to produce and market their products, small farmers usually have inadequate capital to invest, use traditional techniques, depend on family labor, and lack of market access. To market their produce they are very dependent on the presence of intermediaries. In Indonesia this is characterized by informal, non-contractual relationships, with farmers being price-takers and exercising the least power compared to other members of the chain (Singgih and Woods, 2004). So far, there is little evidence of POs facilitating joint marketing, purchase inputs, etc. (World Bank, 2007). The existing farmers' organizations are usually temporary and functioning only to distribute government subsidy and support. It is a challenge, but at the same time an opportunity to establish producer organizations with all its variation. Additional to existing organization forms, one new alternative can also be taken into account, namely community-based enterprise, which combines social and economic incentives. From the author's preliminary assessment, community-based enterprise, with proper community participation level, will likely be a potential bottom-up solution (Soviana and Kühl, 2010).

#### *Integrating consumer-oriented policies in all supply channels*

All players in supply chain should recognize, realize and fulfill the current consumers' demand and trend. Farmers need to understand what kind of products' characteristics demanded by Indonesian consumers. They should also have some knowledge on how to offer better products to consumers rather than imported ones.

#### *Creating favorable political situation*

Nevertheless, the improvement of distribution system should also be accompanied by favorable political situation and policies. Despite the shifting of agricultural market situation, governmental support is still mainly focused on rice production. Horticulture has received little attention from

the government. In the future, it is suggested that the government increases its focus on fruit-vegetable sector, redesigns its policies from top-down management to a kind of community-based approach, and creates more effective government's intervention (subsidy/ support) that stimulates farmers' self-sufficiency and creativity.

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