



## **Agri-Supply Chain in Tourism Market: A Case Study of Koh Trong Ecotourism Community and Market in Kratie Province**

**SAUT MOEUN\***

*Royal University of Phnom Penh, Phnom Penh, Cambodia  
Email: moeun.saut@gmail.com*

**MASAAKI YAMADA**

*Tokyo University of Agriculture and Technology, Tokyo, Japan*

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**Abstract** Stable supply of agricultural products into tourism business is a key for the both sectors to sustainably grow together; however, rural farmers still face challenges in effectuating such a goal. The current research addresses how agri-supply chain exists in tourism market and issues on such a chain in Cambodia through a case study in Northeastern Region. The triangulation methods were employed. Surveys were conducted on farmers, hotels/restaurants and vegetable sellers, whereas semi-structured interviews were done with middlemen, community chiefs, NGOs and local authorities. The farms of Koh Trong are operated with family labors. Most farmers do not have advanced knowledge on farming techniques. Little pesticides are applied, while chemical fertilizers are most commonly used. Most vegetables and fruits are shipped from Koh Trong by middleman across the Mekong River to town market, where they meet with the customers, hotels and restaurants. While middlemen are the price setters, farmers are the price takers. Tourism market consumes less than half of the total vegetables produced by Koh Trong farmers. Besides, agri-products are brought in from other places and imported from Vietnam. Koh Trong responds fairly little to the market demand. Small-scale farms of Koh Trong are less competitive in terms of product variety; however, they are more competitive in terms of high quality and unique products. Major issues affecting the supply chain include limited knowledge, limited transportation, supply irregularity, limited market access and imbalanced power among chain actors. Tourism is yet a small market for agri-products from Koh Trong, but implies a potential one. While conventional supply chain is adequate, there is a barrier to overcome in making the chain more equitable for all market actors.

**Keywords** supply chain, vegetables and fruits, farmers and tourism market

## **INTRODUCTION**

Different researchers defined supply chain. “*Supply chains are networks of firms interacting to deliver a product or service to a predefined market segment*” (Lockamy, Beal and Smith, 2000:23). It contains network firms which are the suppliers, market which is the demand side, the products, and services. Supplying products is done in accordance with service performances because they cannot be separated in sales. Some authors such as Cooper, Lambert, and Pagh (1997) cited in Zhang, Song and Huang (2009) stated that supply chain occurred by a forward flow of products and a backward flow of information. Meanwhile, Chen and Pauraj (2004) defined supply chain as a network of materials, information, and services linked with the characteristics of supply, transformation and demand. These authors emphasized the flow of products, services and the information, which can be inferred that the producers supply based on demand. They also focused partly on the relationship between product supply and information, while Lockamy et al., (2000) paid more attention on the products and services.

Some authors highlight the difficulties for local farmers to access the market. In the article “Supply Chain Models for Small Agricultural Enterprises,” Jang and Klein (2009) concerned that small farmers were not included in the coordinated supply chains. Similarly, Roekel et al., (2002) identified the problems related to the small scale farmers in supply chain that challenge of the new market adjustment, least organized group and small capital were the constraints for small scale producers, leading them to be the losers in market competition, while those accessing capital, technology and logistics enjoyed earning benefits. These issues are more severe for the businesses occurring in agriculture in terms of farmers’ environment, especially the small farmers as Jang and Klein pointed out because farmers had low knowledge on business.

Some models can be used for chain analysis. Supplier models are important for supply chain. According to Philip (2006), there were several supplier models: traditional model, vertical integration, cooperatives, and marketing companies. Out of the four models, marketing companies are less applicable for the supply chain in which local farmers do the supplies. The relationship between suppliers and customers were analyzed in three levels (Croom et al., 2000). First, dyadic level referred to the relationship between only two parties, that of supplier and manufacturer or manufacturer and retailers/ distributors. Second, chain level covered all the relationships in dyadic levels. Last, network level involved the network of operations including upstream/downstream or total/immediate. Besides, Roekel, Willems & Boselie in 2002 discussed the chain knowledge (in supply chain, and the actors in chain, especially the suppliers, are required to have the chain knowledge).

There were a number of terms reflecting the linkage of tourism with agriculture. These terms are farm tourism/farm based tourism (Dernoi, 1983; Hjalager, 1996; Ramon et al., 2000 cited in Sarpley and Vass, 2006; Busby and Rendle, 2000; Brandth and Haugen, 2011), Agro-or agri-tourism (Koc, 2008; Phillip et al., 2010), food tourism (Halloran and Deale, 2004; Ruben et al., 2006). Such terms illustrated the integrated development of tourism and agriculture. Farms were used as the main tourist attractions with the accommodation, food and beverage provided by farmers.

The interrelationship also occurred in terms of the supplies of the local products into hotels/restaurants. “*The use of local foods in restaurants is a growing trend that reflects the desire by many visitors to experience a culture through its footways*” (Hjalagar, 2002; Fields, 2002 cited in Murphy and Smith, 2009). The statement showed how important the supply of local food is in attracting tourists and the relationship between restaurants and local farmers as well. Some other studies illustrated the supplies of local agri-products to hotels/restaurants (Belisle, 1984; Torres, 2003). Farmers sold their products directly to hotels/restaurants or by means of middlemen. Farmers had relationship with hotels/restaurants in terms of fruit supply and hotels/restaurants sent their trucks to transport the fruits from farmers’ fields during the harvesting seasons (Verddouw et al., 2010 cited Torres, 2003). He also indicated that most of the hotels in Cancun had experience with direct supply contracts with local growers.

Three factors affected the relationship of hotels and local farmers (Torres, 2003). First was the supply and production-related factors including poor local growing condition, growing insufficient year-round quantities of products to supply, competition of labour between tourism and agriculture, inconsistent and/or poor quality of local production, poor economies of scale of local enterprises, climate of uncertainty land tenure and limited local processing. Second was demand-related factors related to tourist types, tourist food preference, and the concern of tourists and chefs on health and sanitation. Last was farmers’ marketing difficulty, which might be the serious problems for local farmers to access tourism market. Market-related factors included singular marketing; lack of tax payment; lack of communication and deep trust between producers, enterprisers, tourism suppliers, and hotels; and infrastructure limitation. He also mentioned various supplies done in accordance with the different sizes, grades, franchises, and the nationalities of the owners, managers and chefs of the hotels, which might consist of a variety of supply patterns.

The convenience and sanitation of products for cooking was another option for hotels /restaurants. Belisle in 1985 stated that canned or frozen food was frequently used by hotels because it was more convenient and saved time for cooking. In relation to sanitation, Torres (2003) stated that the chefs of hotels chose the frozen foods on the simple consumption with higher sanitation,

and in his study on “Linkages between tourism and agriculture in Mixico”, 41 % of the chefs imposed the lemmatization procurement directly from local producers owing to the concerns of health and sanitation. If hotels/restaurants use the local products, they need to spend longer time cleaning and/or preparing before cooking. However, the price of canned food may be higher, and it depends on customers’ preferences.

## **OBJECTIVES**

1. To overview family farms of Koh Trong island in the Mekong River
2. To identify the structure of agri-supply chain at the local tourism market of Kratie Town
3. To analyze the factors affecting the supply chain of Koh Trong vegetables and fruits to Kratie tourism market

## **METHODOLOGY**

Both qualitative and quantitative methods were employed in the research. Questionnaire survey, semi-structured interview and observation were used as the methods for primary data collection. Surveys were conducted on 118 local farmers selected by simple random sampling, 23 hotel/restaurant owners chosen by convenience sampling and 61 vegetable sellers at market selected by simple random sampling. Semi-structured interviews were done with local authority, NGOs, chairmen of communities, local farmers, selected by purposive sampling, and middlemen, selected by snowball techniques. Observation was done on the situations of the site and activities of actors involved in the supply chain. Statistical Package for the Social Sciences (SPSS) was employed for analyzing quantitative data, while content analysis was used for analyzing qualitative data.

The research was conducted in Kratie province, located in the north-eastern area of Cambodia, about 240 km from Phnom Penh. Town centre is located next to Mekong River. It had 8 hotels, 18 guesthouses and 21 restaurants registered with the government (Department of Tourism, 2009). On the other side of the river is Koh Trong, one of communes (Sangkat) gown. Koh Trong is an island surrounded by the Mekong River. Boats were the only modes of transport between town and Koh Trong. The total area of the island is 223 hectares with 383 families, who mainly lived on agriculture (National Committee for Sub-National Democratic Development, 2009). This island is also one of tourism sites in Kratie.

## **RESULTS AND DISCUSSION**

### **Cultivation and sales**

Majority of farmers (82.6%) on Koh Trong have education lower than upper secondary school, small sizes of farming lands and traditional tools in cultivation. Pesticides are used for cropping by the higher percentage of farmers (64.1%), while chemical fertilizers are most commonly applied by the lower percentage of the farmers (35.9%). Furthermore, 29.1 % of farmers used only own kept-seeds for growth, with illiteracy of how such seeds may provide different yields from those bought from market. Besides, they lack knowledge on business related to their products.

Most of the vegetables and fruits flowed from local famers to hotels/restaurants through intermediaries. Most farmers (82.2%) sold their agri-products to middlemen. Middlemen collected the products from farmers to sell in both wholesale and retail market of the town. They were the price setters. Tourism market consumed less than 50% of the total vegetables produced by farmers on Koh Trong, while the rest were consumed by household consumers. Besides Koh Trong, the vegetables were taken from other places and from Vietnam to the market. Thus, farmers on Koh Trong have to compete with the suppliers of these vegetables and fruits, especially those from

Vietnam; however, they were more competitive in terms of high product quality and in particular, unique sweet pamelos.

Supply responds fairly less to demand. In comparison between the top five vegetables: long-string bean, salad, tender green, leak and tomato farmers at Koh Trong grew with the top five vegetables: carrot, tomato, cucumber, cauliflower and cabbage consumed by hotels/restaurants, only tomato was supplied by farmers matched the demand by hotels/restaurants, so the other four consumed by the demand from households. Meanwhile, these hotels/restaurants bought tomato supplied from other places and Vietnam. More remarkably, carrot was the special vegetable from Vietnam that domestic farmers could not grow. Therefore, farmers of Koh Trong still supply vegetables into hotels/restaurants fewer in variety than other places and Vietnam.

### **Supply chain**

The whole supply chains of vegetables and fruits exist in two types of structures (figure 1). The first type comprises of 5 groups of actors: farmers, hotel/restaurant owners, middlemen, NGOs and local authority. Second type consists of all actors, except middlemen. Farmers are the suppliers, whereas hotel/restaurant owners are their final customers. Middlemen play crucial roles in connecting suppliers and customers, but in second type, supply and demand connects with each other directly. NGOs and authority play roles as facilitators because they support the local farmers through the activities of community establishments, trainings, policy making, small fund, capital and technical provision and promotion through tourism. However, core actors in chain are farmers, middlemen and hotel/restaurant owners, which are similar to the statement of Lockamy et al., (2000) that in supply chain, services and products flowed from suppliers and/or producers to customers directly or indirectly through distributors and/or retailers.

The current research illustrated some relationships partly similar to the supplier models by Phillip (2006). It found that local farmers grew and sold vegetables and fruits to local middlemen after harvesting. The middlemen packed and took the products to markets to sell in both wholesale and retail-sales. This phenomenon is relevant to what Phillip described as traditional model. Moreover, some farmers, especially some middlemen, packed and took their vegetables and fruits to sell in the retail markets. Such a phenomenon occurs in somewhat Philip called vertical integration model. There are vegetable community and pamelos community on Koh Trong, of which purposes to group local farmers to grow and sell their produces cooperatively. Though it has not worked well yet, it works to some extent with pamelos community as Cambodia Center for Study and Development in Agriculture (CEDAC) collected pamelos from Koh Trong through the community to be on sales in its shop located in the town. However, there is a trend towards cooperative model. Marketing company is not applicable.

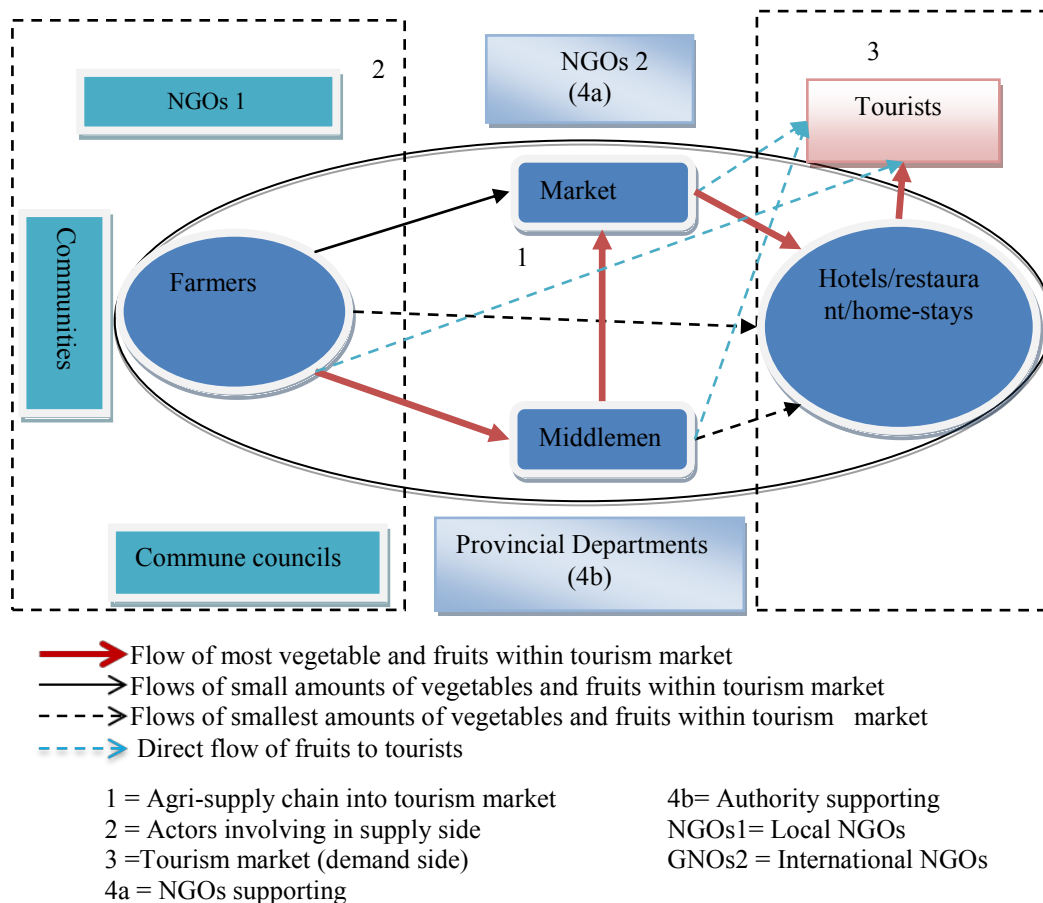
### **Agriculture and tourism**

The relationship between agriculture and tourism can be illustrated through the supply of agricultural products with three forms (Fig. 1). The first form is Farmer-Middleman-Hotel/restaurant (FMH). FMH refers to the supply of vegetables and fruits done from local farmers to hotels restaurants through middlemen. This is similar to the findings of some previous researches, by Belise, (1984), Field, (2002), Torress (2003) and Murphy, (2009) in relation to the supply of local agricultural products to hotels/restaurants. Differently, the research illustrated that local farmers took their vegetables and fruits to hotels/restaurants through intermediaries. These show that the different supply chains may vary according to classes and sizes of hotels/restaurants.

Second form is Farmer-Hotels/restaurants (FH). FH refers to the supply of vegetables and fruits from local farmers on Koh Trong to hotels/restaurants directly. This relationship is also supportive of the previous researches in first form. It demonstrates the direct sales and/or cooperation between local farmers and hotels/restaurants, and this is more similar to what Torres (2003) found. As stated in the first form, hotels sent their trucks to carry out the fruits from farms, and he further said that most hotels in Cancun, Mexico, had direct supply contact with local

growers. The present research found that some hotels bought fruits, especially pamelos, directly from farmers on Koh Trong. They also had oral contracts with local farmers on the island for pamelos supply.

Compared with FMH, FH provides more advantages for the local farmers and hotels/restaurants. First, it provides more economic benefits i.e. the cross margins earned by middlemen can be divided for farmers and hotel/restaurant owners. Second advantage is building the relationship. Selling and buying directly could make local farmers and hotel/restaurant owners more understandable of each other. This also may lead local farmers to succeed largely in market access and be more competitive in market. However, it contains some disadvantages. Without middlemen, farmers have to take their vegetables to hotels/restaurants, or hotel/restaurant owners have to buy on farms, in which either needs to spend extra money and time. There are some problems including supply regularity, transportation, quantity, and seasonality, which is supportive of the issues raised by Torres (2003).



**Fig. 1 Supply of vegetables and fruits with chain actors**

Third form is Farmer-Tourist (FT). FT refers to the relationship in which local farmers supply their agri-products directly to tourists or they do businesses on their own farms based on tourism, known as farm tourism or farm based tourism.

## CONCLUSION

The farms on Koh Trong are small-scale and family-oriented farms. Tourism is yet a small market for agri-products from Koh Trong, but implies a future potential one. While conventional supply chain is adequate, there is a barrier to overcome in making the chain more equitable for all market actors. Limited knowledge, limited transportation, irregular supply done by Koh Trong farmers,

limited market access and imbalanced power among the chain actors are the issues affecting the supply chain. Farmers should increase growing crops to supply more regularly and build group for supplying their agri-products so that they can gain more power in negotiating the price of the products with middlemen.

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