

Approaches to Morning Glory Supply Chain Management of Tung Yee Peng Community, Ko Lanta District, Krabi Province

Boontaree Chanklap, Kridtiya Subsoonthonkul, Kanokwan Suphap,
Tassanee Wongpira and Hattaya Sandee

Walailak University, Thailand.
Email: Boontareec@gmail.com

Received April 25, 2021; **Revised** May 19, 2021; **Accepted** May 26, 2021

DOI: 10.14456/ijmmt.2021.2

Abstract

The study uses soft systems methodology (SSM) to guide the in-depth interview in proposing the Morning Glory Supply Chain Model for Tung Yee Peng Community, Ko Lanta District, Krabi Province. Informants include the community head, Tung Yee Peng farmers, project partners and possible buyers. Results revealed that the Morning Glory Supply Chain Model was indeed functional. The model of Tung Yee Peng Morning Glory Supply Chain was started with the Upstream Level, Tung Yee Peng farmers cultivating and harvesting their morning glory and delivering them to the distributor agent or a community head, followed by the Mid-stream Level placing emphasis on the distribution management. The distribution agent or a community head was in charge of an intermediary connecting the farmers and the morning glory buyers such as hotels, restaurants and markets in Ko Lanta. The last one was the Downstream Level consisting of ultimate consumers such as household consumers, tourists, and etc. However, the proper Morning Glory Supply Chain Model for Tung Yee Peng Community, Ko Lanta District, Krabi Province, revealed that Tung Yee Peng Morning Glory Project should focus on the supply chain management in order to get more morning glory distribution channels, including managing the amount of cultivating morning glory, which was to set the cultivating and harvesting duration. Tung Yee Peng farmers cooperated with the distribution agent and a community head and to determine the sales price, the production volume, the collection and the transfer of morning glory from Tung Yee Peng to be distributed in Ko Lanta.

Keyword: Supply chain, morning glory, Tung Yee Peng community, soft systems methodology.

Introduction

Tung Yee Peng Community, Ko Lanta District, Krabi Province, has recently developed the community way of life. They had ever worked in the sea, fishing around Ko Lanta, as well as working on a farm and a rubber plantation. Now, Ko Lanta has become an ecotourism community relying on the tourism trend flowing into Ko Lanta. The villagers have learned and adapted themselves to be in harmony with the tourism trend, even though they are still holding their cultures and protecting their natural resources for the continuity of the community. They have also received supports in various aspects from government sectors and networks. The area survey and discussion with a community head and Tung Yee Peng Community farmers, Ko Lanta District, Krabi Province, was intended to seek an approach to developing the community and to transform Tung Yee Peng Community into a functional agricultural community.

The villagers cultivate their home-grown vegetables to provide sufficient food for household consumption and to increase the household income by selling the vegetables. However, the problem and obstacle obstructing home-grown vegetable cultivation of Tung Yee Peng Community is that macaques, insects and pests invade the vegetables. Especially, the macaques, when the vegetables produce their buds, the macaques will eat the buds and fruits immediately. As a result, a community head and the villagers propose to cultivate vegetables that are not eaten by macaques and are fast to grow and sell such as morning glory, Chinese cabbage and fennel. Most of the villagers are interested in growing morning glory which is an economic crop and makes a good profit for the farmers (Ketrakrai, Dampin, & Chunkao, 2018).

Then, they had an idea to embark on Tung Yee Peng Morning Glory Project. However, the smallholder vegetable farmers make low bargaining power of the buyers due to lack of the product delivering continuously to the buyers (Chudang & Waisarayut, 2014). So, there should be a plan to design an approach for supply chain management; started by studying the model of Tung Yee Peng Morning Glory Supply Chain and existing distribution channels and followed by creating a group of morning glory cultivating farmers, morning glory buyers, distribution markets, distribution channels and consumers. Launching Tung Yee Peng Morning Glory Project will enable the villagers to understand the processes of the supply chain and be ready to work for the project.

This study aims to investigate the Morning Glory Supply Chain Model and to study the proper Morning Glory Supply Chain Model for Tung Yee Peng Community, Ko Lanta District, Krabi Province.

Research Methodology

This research is aimed to study the Morning Glory Supply Chain Management of Tung Yee Peng Community, Ko Lanta District, Krabi Province.

Data were collected using an in-depth interview and a purposive sampling method. Main informants were the project partners. There were fourteen samples in total, consisting of a community head, three leaders from the community participating in the project and ten morning glory buyers in the area of Ko Lanta District, Krabi Province.

An analysis and design process was conducted with assistance of the Soft System Methodology (SSM) (Checkland, 2000) which is a technique for systematically analyzing the problem and possibility of the supply chain within the related social conditions (Gencoglu, Altmann, Smith, & Mackay, 2002); (Ragsdell, West, & Wilby, 2012). The model of supply chain was presented by the supply chain structure (Chopra & Meindl, 2007).

Research Results

Result from the general data survey to study the model of Tung Yee Peng Morning Glory Supply Chain, Ko Lanta District, Krabi Province, revealed that the needs of morning glory buyers in Ko Lanta was on Chinese morning glory at most and followed by Thai morning glory.

According to the study on the morning glory buying data in Ko Lanta District from a group of vegetable distributors, restaurants and general consumers, most of the vegetable distributors are buying morning glory and other vegetables from other provinces being distributed in Ko Lanta such as Hua It Market in Nakhon Si Thammarat province and etc. Restaurants always buy Chinese morning glory because during the high seasons, foreign tourists usually order a stir-fried morning glory dish. The general consumers do not buy a big amount of morning glory because it is only for household consumption.

In addition, the study on the morning glory buying trend in Tung Yee Peng Community, Ko Lanta District, revealed that most of the morning glory buyers were interested in buying morning glory from Tung Yee Peng Community. If there were any project implementation, 90 percent of 10 groups of morning glory buyers would be interested in morning glory from Tung Yee Peng Community and most of them are groups of restaurant businesses due to the variety of price ranges and a lack of supply.

Interviewing for the problems and obstacles of the Morning Glory Project in Ko Lanta, Krabi Province, revealed that the main problem is a season of Ko Lanta being affected the needs of morning glory. The tourism cycles have been divided into high seasons and low seasons. These cycles generate effect on the amount, the needs, and the price of morning glory. During the low seasons, there is relatively low demand for morning glory and so there is for other vegetables because most of the businesses will be at a standstill within this period.

From the aforementioned impact, the study of the model of Tung Yee Peng Morning Glory Supply Chain in Ko Lanta proposed two models of the Morning Glory Supply Chain: 1) the Supply Chain of morning glory from outside Ko Lanta and 2) the Supply Chain of morning glory cultivating and distributing in Ko Lanta:

- 1) The Supply Chain of morning glory from outside Ko Lanta, starting with a middleman selling the morning glory and other vegetables to Mai Yord Shop. Then, the middleman and Mai Yord Shop distributed them to the hotels, markets, restaurants and consumers.
- 2) The Supply Chain of morning glory cultivating and distributing in Ko Lanta, starting with farmers cultivating and distributing the morning glory in Ko Lanta. They collected the morning glory and distributed to the hotels, markets, and restaurants, including the consumers buying directly from the farmers.

An in-depth interview with the community head about an approach to design distribution channels for Tung Yee Peng morning glory revealed that a community head is a distributor of Tung Yee Peng morning glory and make a distribution in Ko Lanta District, Krabi Province. The distribution channel is designed as a one-level channel. The distribution passes through a middleman who is a distributor agent or community head in charge of distributing the product to the consumers, instead of Tung Yee Peng farmers, as shown in Fig. 1.

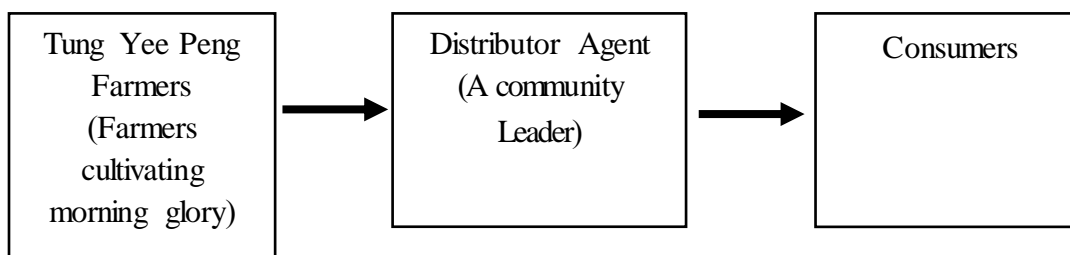


Fig. 1. The design of distribution channel for morning glory from Tung Yee Peng community

Yee Peng Community is undertaken by the Soft System Methodology (SSM). It is to design and describe the perspective Morning Glory Supply Chain Management of Tung Yee Peng Community structure, comparing to the possible facts and analyzing the existing problem, and to carry out an improvement to be a functional structure. The analysis started with an overall analysis of Tung Yee Peng Morning Glory Supply Chain. After that, the researchers performed the cultural analysis or the supply chain operation analysis to identify problems, structure and roles of the supply chain.

The supply chain relationship analysis results were illustrated in Table 1 below.

Table 1. The morning glory supply chain analysis

1) Customer: (The ones using the supply chain model)	Farmers cultivating morning glory and/or suppliers, supply chain partners
2) Customer needs:	Improve and design the supply chain
3) Problem solvers: (The ones facilitating the supply chain improvement and design)	Related facilitators, Supply Chain Partners
4) Existing resources:	Supply Chain Partners, data, knowledge
5) Limitation:	Duration, knowledge and data about the supply chain of the partners, environment and climate in Ko Lanta, season
6) Parties facing the problems:	Farmers cultivating morning glory and Tung Yee Peng Community head
7) Impact of the selected problem (arising as a result of the identified problems)	Tung Yee Peng Morning Glory Project has not been launched. So, the farmer cultivating morning glory and a community head does not have any exact activities because they cannot understand clearly the perspective of Tung Yee Peng Morning Glory Supply Chain.
8) Consequences of the existing problem: (Consequence of the problem, if unsolved.)	They may lose marketing, cooperation and effective operation opportunity.
9) Value of the ongoing problems: (The value gained from solving the problem)	Reducing instability of cultivating area, avoiding environment and climate in Ko Lanta, morning glory cultivating season, including getting new morning glory distribution channels and the perspective of Tung Yee Peng Morning Glory Supply Chain

As illustrated in Table 1, for customers or the ones who want to modify the analysis and design of the supply chain to use with Tung Yee Peng Morning Glory Project, the table displays the structure and roles of partners in Tung Yee Peng Morning Glory Project such as supply chain facilitators and partners, the relationship within Tung Yee Peng Morning Glory Supply Chain. It takes into account the needs and its partners. Many factors have an impact on the improvement and design of the supply chain such as existing resources, limitation, and impact of the selected problem, cause of the happening problem and value of the happening problem.

At the next stage, the scope of CATWOE analysis will be determined. Table 2 summarizes the CATWOE descriptions for guiding the data collection and analysis.

Table 2. CATWOE analysis

CATWOE Analysis	Scope of Data Analysis
C (Customers): The ones using the model	Tung Yee Peng villagers
A (Actors): Operator	Tung Yee Peng Morning Glory Supply Chain partners such as villagers cultivating morning glory, morning glory distributors and buyers
T (Transformation): Things to be modified	In-depth interview and observation
W (Weltanschauung): All perspectives	Project operation of Tung Yee Peng Morning Glory Supply Chain and to truly use the model in Tung Yee Peng Community
O (Ownership): Partners	Tung Yee Peng Morning Glory Supply Chain partners
E (Environment): Environment	Duration, knowledge and data about the supply chain of the partners, environment and climate in Ko Lanta, season and the cultivating area.

From Table 2, the operational structure of Tung Yee Peng Morning Glory Supply Chain was subsequently designed based on the comparison with the possible facts. In analyzing the possibility of each activity within Tung Yee Peng Morning Glory Supply Chain, as shown in Table 3, if there is any implementation to study the on-going activities, it is to find out the management format as shown in Table 3.

Table 3. Comparative analysis of supply chain design and the fact

Activity in the Model	Status	How	Who	Good or not good	Option
Tung Yee Peng Morning Glory Project	Partly on-going	Plan and design the supply chain, including morning glory distribution channel (If the project is on-going)	Supply Chain Partners	Good	Study the Morning Glory Supply Chain in Ko Lanta to plan and design the supply chain and find distribution channels
Cultivating morning glory	Not started yet.	Plan to cultivate morning glory	A community head and Tung Yee Peng farmers	Good	Considering production ability, cultivating area of each family and the amount and needs of morning glory in the Ko Lanta markets

Morning glory distribution agents from Tung Yee Peng Community	Not started yet.	Be a morning glory collector from Tung Yee Peng to distribute to the consumers in Ko Lanta	A community head	Good	It can be operated, if the distributors have a connection with the consumers throughout Ko Lanta
--	------------------	--	------------------	------	--

After comparing the operation possibility of Tung Yee Peng Morning Glory Project, it can be improved as a proper operation as shown in Table 4.

Table 4. Properly-improved approaches

Activity	How	Possibility	Possible Operation
Determine the amount of cultivating morning glory	Study morning glory cultivating areas of villagers participating in the project	Possible	Calculate the total area that can cultivate morning glory and plan a plan for each family by determining the cultivating duration and amount.
Grow the morning glory	Tung Yee Peng villagers growing morning glory according to the volume specifying for each family location	Possible	Cultivate morning glory depending on the calculated cultivating area or the plan determining by a community head
Tung Yee Peng morning glory distributor (A community head)	Contact the morning glory buyers in Ko Lanta District to gather orders and also plan the total cultivated amount	Possible	Tung Yee Peng morning glory distribution agent or a community head contacting the buyers in Ko Lanta is to make a production plan and cultivating prediction.

For the data analysis of the supply chain design, the Soft System Methodology (SSM) was employed in order to design and display the possibility of Tung Yee Peng Morning Glory Project within Tung Yee Peng Supply Chain, accompanied by data derived from the in-depth interviews of the supply chain partners such as Tung Yee Peng farmers, a community head, and morning glory buyers. It is to study all related Morning Glory Supply Chain in Ko Lanta in order to design Tung Yee Peng Morning Glory Supply Chain. If there is an implementation of Tung Yee Peng Morning Glory Project, it commenced with receiving orders from the buyers to delivering the product to the ultimate consumers.

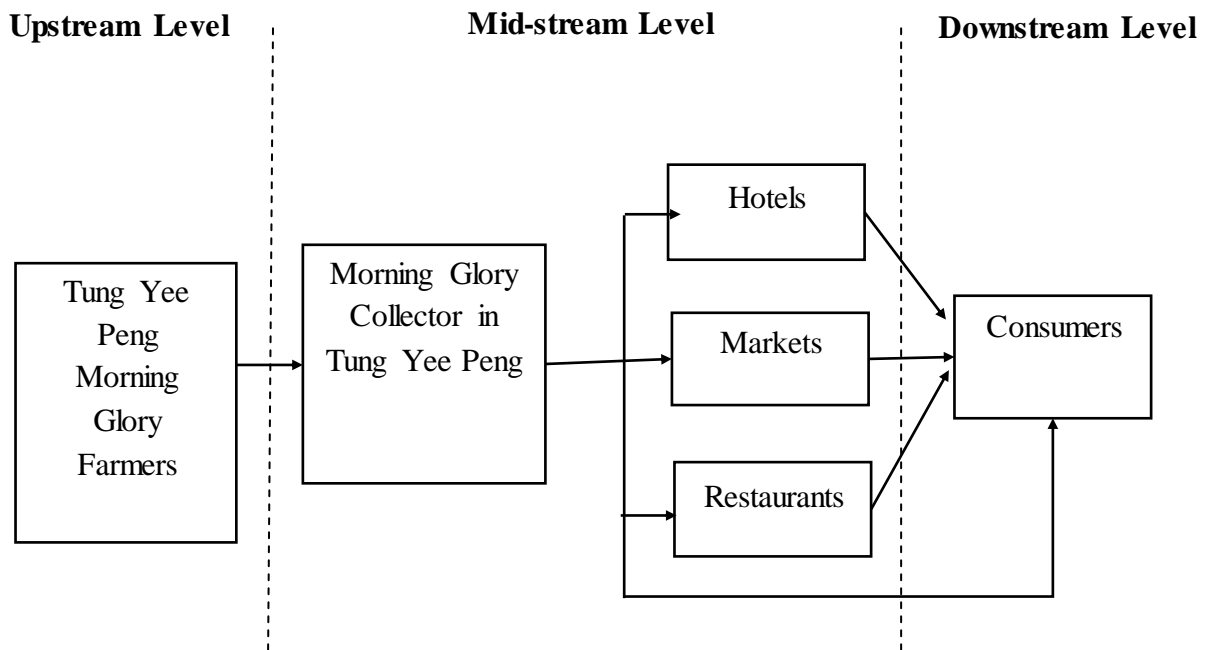


Fig. 2. A proper model of Tung Yee Peng morning glory supply chain

It is also noted in Fig. 2 that Tung Yee Peng Morning Glory Project starts its structure with Tung Yee Peng farmers cultivating morning glory. After harvesting the product, a community head will collect all the products for quality classification and packaging. Then, the product will be distributed to the consumers in Ko Lanta according customer's orders, both in retail and wholesale to the customers.

Obviously, the supply chain partners are the Upstream Level, Tung Yee Peng farmers cultivating their morning glory according to the order given by a community head. Each family has to cultivate morning glory at least 10 kilograms per week. When the morning glory is ready for harvesting, the distribution agent or a community head will collect the morning glory in order to classify their quality and perform a basic cleaning. Then, prepare the packaging for customers' orders in Ko Lanta, Krabi Province. Mid-stream Level focuses on distribution operation to the predominant morning glory buyers such as hotels, restaurants and markets in Ko Lanta, Krabi Province.

Therefore, the model of Tung Yee Peng Morning Glory Supply Chain places emphasis on the supply chain management to provide morning glory distribution channel for Tung Yee Peng community, including management of morning glory cultivating amount by determining duration, cultivating date and harvesting date as shown in Fig. 3.

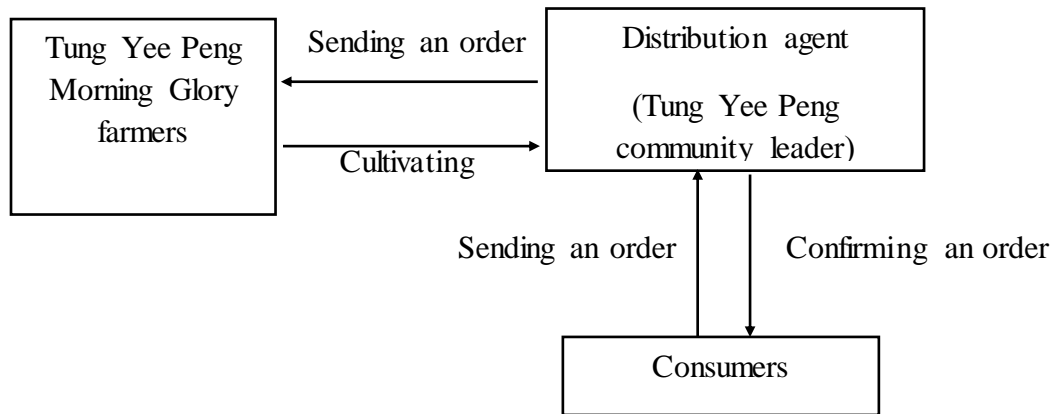


Fig. 3. A proper morning global supply chain operation

Discussion and Conclusion

The research on “Approaches of Morning Glory Supply Chain Management of Tung Yee Peng Community, Ko Lanta District, Krabi Province” revealed that the design of Tung Yee Peng Morning Glory Supply Chain, Ko Lanta, Krabi Province.

The SCM model is designed using the Soft System Methodology (SSM), which describes the perspective structure in comparison with the possible facts and to analyze the existing problem and to carry out an improvement to be a well functional structure.

Started with the Upstream Level, Tung Yee Peng farmers cultivate and harvest the morning glory and deliver the morning glory to the distributor agent or a community head. Next, the Mid-stream Level places is focusing on the distribution management. The distribution agent or community head is in charge of an intermediary connecting the farmers and the morning glory buyers such as hotels, restaurants and markets in Ko Lanta, Krabi Province. The farmers have a close connection with the leader and the middleman in the area. It is appeared to be consistent with the study of Saraswati (2020), who found that a community business farmers and traders have a close connection and mutual trust, so that they can cooperate. In addition, the Downstream Level, the product is delivered to the ultimate consumers such as household consumers in Ko Lanta, tourist, etc.

References

- Checkland, P. (2000). Soft systems methodology: a thirty year retrospective. *Systems research and behavioral science*, 17(S1), S11-S58.
- Chopra, S., & Meindl, P. (2007). Supply chain management. Strategy, planning & operation. In *Das summa summarum des management* (pp. 265-275). Berlin: Springer.
- Chudang, W., & Waisarayut, C. (2014). *Situation analysis for safe certified vegetable supply chain in Bangkok and vicinity*. Paper presented to the Graduate Research Conference Khonkaen University, Khonkaen Province.
- Gencoglu, G., Altmann, G., Smith, R., & Mackay, D. (2002). Using soft systems methodology to address supply chain management problems. *Australasian Journal of Information Systems*, 9(2), 49-56.

- Ketkrai, S., Dampin, N., & Chunkao, K. (2018). Production and Distribution of Water Spinach (*Ipomoea aquatic* Forsk) in the Tha Chin River. *Thai Science and Technology Journal*, 26(8), 1325-1335.
- Ragsdell, G., West, D., & Wilby, J. (2012). Systems theory and practice in the knowledge age. Berlin: Springer Science & Business Media.
- Saraswati, E. (2020). Fish supply chain model in traditional market: Case study of Beringharjo market Yogyakarta. *E3S Web of Conferences*, 147, 1-10.