

A Study of Supply Chain of Chili Spur Pepper for Food Industry in Thailand

Adilla Pongyeela¹

Sirichai Pongwichai²

ABSTRACT

This study aimed to survey and analyze the output, problems of Chili Spur Pepper for food industry in Thailand, study the purchasing criteria of Chili Spur Pepper, problems which the middlemen and manufacturing plants had faced, and study purchasing behavior of Indonesian distributors and consumers for buying Chili Spur Pepper products, and study the adoption process of Chili products from Thailand in Indonesian market. The population were Chili Spur Pepper planters in Thailand. The sample size was 409 planters, 133 the middlemen, 21 manufacturing plants, 24 Indonesian distributors, and 171 Indonesian consumers. Data were collected from all regions in Thailand. Product testing was done in Indonesia. The questionnaire was used as a research instrument, and results supported by including in-depth interview and focus group method. The results of this study were beneficial for both public and private sectors.

Keywords: Chili Spur Pepper, Supply Chain, Purchasing Behavior

¹ Asst.Prof. , Dhurakit Pundit University

Instructor, CIBA, Dhurakit Pundit University, Bangkok, Thailand.

Email: adilla777@yahoo.com

²Assoc.Prof. Dhurakit Pundit University

Instructor, College of Commerce and Accountancy, Chulalongkorn University,Thailand.

E-mail: timtoytee@yahoo.com

Introduction

Supply chain nowadays is one of the significant issues of business worldwide. High performance business must find the ways and means to create the value of products towards the supply chain in both domestic and international markets. The business should know the suitable way to do add product value to gain more revenues and more skills. It would be easier to manage if those products have raw materials domestically or inside the country such as chili spur pepper in Thailand. The chili spur pepper is one of the economical plants for food industry in Thailand and export those products to many countries. Most ASEAN people add chili in daily life meals to make their food tasty. Therefore, chili products still have place in the market especially ASEAN market. Thailand is very popular in the world market for food which was named Kitchen of the World. The business will gain more competitive advantage when the owners put more concentration and able to do their works by themselves (Pongyeela, 2013). It would be better if the entrepreneurs of food products have knowledge and understand their own supply chain of the products and would be able to control some chain to reduce

uncertainty conditions and also should understand others who work in other chains in order to compromise and balance the whole chain to be stable in the long run. That was why the researchers were very interested to study this topic. This study may solve the problems of the shortage of chili spur pepper supplies among the ASEAN region.

Objectives of the study

The objectives of the study were as follows:

1. To survey and analyse the output, problems of Chili Spur Pepper for food industry in Thailand,
2. To study the purchasing criteria of Chili Spur Pepper, problems which the middlemen and manufacturing plants had faced, and
3. To study purchasing behaviour of Indonesian distributors and consumers for buying Chili Spur Pepper products, and study the adoption process of Chili products from Thailand in Indonesian market.

Literature review

Supply chain is the linkage among each working point starting from the working point of raw material to consumers. Along

the chain, it was composed of many players there were suppliers, manufacturers, distributors, retailers, and customers (Chowalitwong, 2011). Then, the quality of the product depends on every point along the chain. That is why supply chain management comes to this importance to integrate the whole work properly. The important activities for supply chain management there are procurement, transportation, warehousing, and distribution.

Chili spur pepper is the big chili which is good for making souse. It is one kind of annual crops. Deangbuppa (2007) studied the chili planting in sukhothai province found that most of planters had the area of planting not more than 3 rai. They had total cost 15,000-20,000 baht/rai. They were able to make good profit. Sanadee (2006) found that most of manufacturing plants needed chili which depend on size that should have some weights, red color, less contaminants, enough quantities, and available the whole year. Maejo (2011) summarized about problems of chili spur pepper business as follows 1) uncertainty of supplies bring to uncertainty of price, 2) fluctuated climate bring to the stock problems of fresh chili

before delivering to buyers, 3) Trade barriers of EU. He also suggested to see the opportunity for chili products in Indonesian market. If the manufacturers would like to propose the new products to Indonesian market successfully they must pass the adoption process. There are 5 steps: 1) awareness, 2) interest, 3) evaluation, 4) trial, and 5) adoption (Kotler 2009, Pipatsareetham, 2006)

Methodology

This research used both quantitative and qualitative method to achieve the objectives of the study. This research was done through the survey, in-depth interview and focus group methods. The detail of methodology is as follows.

1. Population and Sample

The populations were 4 groups there were chili spur pepper planters in Thailand, the middlemen, the manufacturing plants, and Indonesian distributors and consumers. The sample sizes were composed of 409 planters, 133 the middlemen, interviewed 21 manufacturing plants, and the market testing was done through 24 Indonesian distributors, and 171 Indonesian consumers.

2. Data Collection and Analysis

Data were collected from chili spur pepper planters in the provinces which have chili spur pepper plants in Thailand using stratified sampling. The questionnaire was used as a research instrument, including in-depth interview method and focus group. The middlemen in the area of chili plants were surveyed and in-depth interviewed. For manufacturers, data collection was done through in-depth interview with the entrepreneurs of chili products manufacturers and exporters of Thailand. In-depth interview was done with Indonesian distributors in the Thai Food Fair in Jakarta, Indonesia including doing market testing with both distributors and consumers in the fair. The sample size of the testers was about 17% of the attendances. The questionnaire was passed doing the pretest both validity and reliability. Data were analyzed by descriptive statistics for quantitative research and for qualitative research using content analysis.

Results of the study

The results of the study were explained according to the 3 objectives mentioned above.

1. The Result of Studying Upstream Supply Chain: To survey the

planters and analyze the output, problems of Chili Spur Pepper for food industry which affecting to price and quantity. It was found that most of the planting areas were in the north. Most of the planters had plants not more than 3 rai (rai is traditional Thai measurement for land, one rai = 3.95 acres or 1,600 square meters). The average output was 2,832.83 kgs./rai The lowest and highest output was in range 1,000 - 6,231 kgs./rai The average costs were 16,922.38 baht/rai which composed of planting cost 7,603.30 baht, caring cost 6,109.58 baht, harvesting cost 3,114.57 baht, and opportunity cost 94.93 baht. The average selling price was 19.76 baht/ kg. The lowest was 10 baht/kg. The highest was 25 baht/kg. These prices were industrial prices for domestic manufacturing plants. At the average selling price the planters had profit 38,991.38 baht/rai. At the lowest price the planters had profit 9,967.22 baht/rai. At the highest price the planter had profit 52,411.87 baht/rai. The popular types of chili spur peppers were Mae Ping, Wiengsa, and Yoksiam. Problems of planting were diseases and climate change which affecting to both output quality and quantity and affecting to market demand which effected to price.

2. The Result of Studying Middle Stream Supply Chain: To study the purchasing process of Chili Spur Pepper, problems which the middlemen had faced including the manufacturing plants. It was found that there were middlemen in each planting area to collect the outputs from the planters to manufacturing plants up to the orders. The popular types of chili they bought were the popular types of planting because the middlemen and planters in each area shared information to each other

in order to serve the needs of industrial buyers who buy the whole year or every year in long term if the quality of the chili met the specification. The middlemen sent the products to the chili souse manufacturing more than others. The spread between the buying price and the selling price which the middlemen got mostly was 2 baht/kg. The purchasing costs of the middlemen were the cost of labour, equipment, and transportation.

Table 1 The purchasing criteria of middlemen

Basis for purchasing	Number of respondents	%
1. Colour	102	30.27
2. Hotness	81	24.04
3. Size	72	21.36
4. Clean polar	42	12.46
5. No contaminants	13	3.86
6. No disease	11	3.26
7. Odor (Smell)	9	2.67
8. Pass primary screening	7	2.08
Total	337	100.00

The selection criteria were color, hotness, size, clean polar pepper, and contaminants and others as were shown in table 1. The selection focused on red color because

most of chilies were sent to make sauce which had red color that we had seen in the markets both domestic and international.

Table 2 Problem and barriers of middlemen in purchasing chili spur pepper.

Problems and barriers	Number of respondents	%
1. Uncertainty condition	63	47.37
2. Dishonest planters	22	16.54
3. No tool to detect contaminants.	20	15.04
4. Price uncertainty	18	13.53
5. No successor to be planters	10	7.52
Total	133	100.00

The problems that they concerned were uncertainty conditions of the chili outputs, the planters were not honest, lack of checking equipment, price fluctuation and no successor, respectively, were shown in table 2. The uncertainty conditions of the chili outputs might come from natural

conditions that were uncontrollable factors. This results were similar with the findings of Inproma (2008) and Maejo (2011) which about the uncertainty outputs of chili, depended on natural conditions and related to the price change.

Table 3 Purchasing criteria for manufacturing plants (total = 21 persons)

Criteria of purchasing chili	Number of respondents	%
1. Colour – red colour	21	100.00



2. Not hot (too spicy)	21	100.00
3. Clean pole	21	100.00
4. A lot of meat	19	90.48
5. Less seeds	17	80.95
6. Less water succulent	16	76.19
7. No Disease	15	71.43
8. No contaminants	12	57.14

Most of all, the manufacturing plants used chili to produce the chili souse to serve both domestic and international markets. Thai manufacturers exported chili products to the countries in ASEAN more than other places because people in this area like hot food taste. The manufacturing criteria for purchasing chili were color, not hot, clean pole, less seed and water, and contaminants or no disease (see table 3). Most of the manufacturers bought chili 1-3 ton each time. This result was consistent with the findings of Sanadee (2006) which about the requirements of chili for manufacturing plants.

3. The Result of Studying Downstream Supply Chain:

To study purchasing behavior of imported distributors for buying Chili Spur Pepper products which focused on Indonesian market, and study the adoption

process of Chili products developed by the co-project of this study. From the in-depth interviewed of Indonesian distributors, it was found that Indonesian market is very interesting and big market. The population was more than 240 million. Most of them eat chili every day. The popular chili product in Indonesia was the chili souse called Sambal. Transportation is not easy in Indonesia. The exporters must use the local imported distributors or local agents to purchase the products because the process was complicated and there were many regulations especially food products. The rules might be changed. The imported distributors bought the products in big lot. Many times they bought semi- finished food products to continue doing and packaging in Indonesia. The researchers could see the opportunity in Indonesian market for chili products and went there to observe the

local chili products and markets. From the observation it was found that people there love to eat Sambal. There were many kinds of chili souse (Sambal) in Indonesian market with different prices. The researchers gave primary information resulted from this research to the co-project to develop the

chili product for Indonesian market. There were ROA, LAMPUNG, BALADO, and PADANG (Hiragha, 2013). The market testing of those products was done through the adoption process: there were awareness, interesting, evaluation, trial, and adoption.

Table 4 Criteria for selecting products (sambal) of the Indonesian testers

Criteria in selecting products	Number of respondents	%
1. Taste	170	63.43
2. Spicy(Hotness)	42	15.67
3. Price	38	14.18
4. Smell	12	4.48
5. Colour	3	1.12
6. Texture	3	1.12
Total	268	100.00

After testing the market at the Thai Food Fair in Jakarta, Indonesia, it was found that the distributors and consumers had known sambal, interested in products. The most important criteria of evaluation were the taste, followed by hotness, and price,

smell, color, and texture respectively (see table 4). It was found that the taste is the most important for foods. That was why food business needed to do market testing as it was in the next step of this study.

**Table 5** The chili products acceptability from Indonesian testers

Products acceptance	Customers			Distributors		
	Mean	S.D.	Acceptance level	Mean	S.D.	Acceptance level
ROA						
Acceptance level	3.82	0.93	High level	4.11	0.81	High level
LAMPUNG						
Acceptance level	3.69	0.82	High level	3.64	1.03	High level
BALADO						
Acceptance level	3.36	1.14	Medium level	2.68	0.62	Medium level
PADANG						
Acceptance level	3.49	1.14	High level	3.29	1.01	Medium level

Range of Mean**Meaning**

1.00 -1.80

Lowest level of acceptance

1.81 -2.60

Low level of acceptance

2.61 -3.40

Medium level of acceptance

3.41 -4.20

High level of acceptance

4.21 -5.00

Highest level of acceptance

After testing, they accepted all products but at different level, (see table 5) they

preferred ROA most of all, followed by LAMPUNG, PADANG, and BALADO

respectively. Most of the testers offered the price at 11,000-15,000 Rupiah (approximately 33-45 Baht) for each product

(see table 6). They also suggested for improving the products in order to better response to their needs of customers.

Table 6 The prices of the tasting products offered by Indonesians testers

Interested buying prices	Customers		Distributors	
	Number of respondents	%	Number of respondents	%
Not more than 10,000 rupiah (30 baht)	6	3.51	0	0.00
10,001– 15,000 rupiah (30-45 baht)	88	51.46	10	41.67
15,001– 25,000 rupiah (>45-75 baht)	34	19.88	10	41.67
>25,000 rupiah (>75 baht)	43	25.15	4	16.66
Total	171	100.00	24	100.00
Lowest price	10,000 (30 baht)		15,000 (45 baht)	
Highest price	37,000 (111 baht)		30,000 (90 baht)	
Average price	18,824.56 (56 baht)		19,458.33 (58 baht)	
standard deviation	5,870.53 (17.61 baht)		5,298.54 (15.89 baht)	

(Approximate exchange rate: 1,000 rupiah = 3 baht)

For the results of qualitative study, the planters complained about the high cost of buying seeds and fertilizer. The middlemen who made contracts with planters

complained about dishonest planters. Most of manufacturing plants exported the chili products to the markets in Asia more than other parts. The Indonesian distributors

explained that the import process to Indonesia for food products was not easy. They spent long time and there were many rules for importing foods, and the rules might be changed. They recommended the foreign exporters need to have local agent for importing the food products.

Conclusion

The results of the study show that the most of the planting areas were in the north of Thailand. The output per rai was ranging from 1,000 to 6,231 kgs. The three popular types were Mae Ping, Wiengsa, and Yoksiam. The most significant problem which they had faced was uncertainty conditions of the chili outputs. The purchasing criteria of Chili Spur Pepper were colour, not hot, clean pole, a lot of meat, less seeds, less water, no disease, no contaminants, respectively. The purchasing criteria of Indonesian distributors and consumers for buying Chili Spur Pepper products from Thailand in Indonesian market were taste, spicy, price, and smell, respectively. Indonesian preferred ROA and LAMPUNG, and offered good price for the products.

Suggestions

From this study the results could bring to the suggestions as follows:

1. This study expressed the costs, revenue, and net profit of chili spur pepper planting, then, the planters could bring these information to plan for profit.

2. Each party who operates in different chain should take the effort to be good alliances together because from the study different party faced different problems. Some problems could be concurred by being alliances.

3. Government should support the information and help to do the road show for Thai food products like the Thai Food Fair in Jakarta. The local customers could come to test the products in order to expand more opportunities.

4. The planters and manufacturers must strict with the imported conditions of international market especially food products.

5. The producer of the co-project should improve sambal up to the comments of Indonesian testers to serve their needs.

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