



**A STUDY OF THE KEY FACTORS INFLUENCING
THAI GROWERS' PURCHASE DECISIONS OF
IMPORTED CABBAGE SEED**

BY


MISS CHARUPORN SUKKASET

**AN INDEPENDENT STUDY SUBMITTED IN PARTIAL
FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF SCIENCE PROGRAM IN MARKETING
(INTERNATIONAL PROGRAM)
FACULTY OF COMMERCE AND ACCOUNTANCY
THAMMASAT UNIVERSITY
ACADEMIC YEAR 2016
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ENTITLED

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was approved as partial fulfillment of the requirements for
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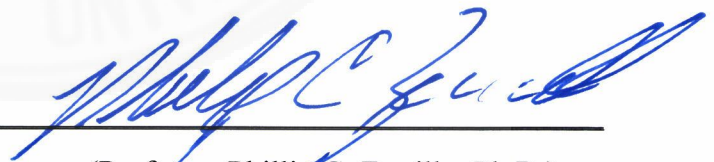
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Independent Study Title	A STUDY OF THE KEY FACTORS INFLUENCING THAI GROWERS' PURCHASE DECISIONS OF IMPORTED CABBAGE SEED
Author	Miss Charuporn Sukkaset
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ABSTRACT

This study is a contemporary topic in applied marketing which is relevant to the subject of international business. The objectives of the study are primarily aimed at understanding cabbage market in Thailand, particularly the seed section; secondly, understanding the cabbage seed market structure and supply chains; thirdly, understanding cabbage seed varieties which are currently offered by suppliers from overseas and used in Thailand; and fourthly, identifying the growers' purchase criteria for cabbage seed in order to meet end-consumers' needs and expectations.

Data and insights were obtained from primary and secondary research. 11 in-depth interviews were conducted with growers, collectors and fresh produce wholesalers. 5 growers and 3 collectors in Chiang Mai, a main growing area for cabbage, were interviewed. 2 fresh produce wholesalers at Sri Muang Market (Ratchaburi) and 1 fresh produce wholesaler at Talad Thai Market (Bangkok) which sell and distribute fresh produce from Chiang Mai, were interviewed.

The results and recommendations in this report show insightful information that will certainly help all agricultural sectors and interested parties, especially in cabbage seed section, better understand the overall market and the characteristics of cabbage growers. It will also be a guideline to help develop effective marketing

(2)

strategies and better quality seeds that will satisfy not only the growers, but also the end consumers' needs and expectations.

Keywords: Imported cabbage seed, supply chain, growers, collectors, wholesalers



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Miss Charuporn Sukkaset

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CHAPTER 1

INTRODUCTION

1.1 Problem Statement and Research Purpose

The agricultural sector has long been the most important part of Thailand's economy. People have called it the country's backbone because it has generated food and incomes to Thai people. (Singhapreecha, 2014) Although Thailand is predominantly an agriculture-based country, not all kinds of seed are available domestically. Thai people still need to import many of the seed varieties from overseas and among those imported, cabbage is considered to be one of the most valuable seeds.

Cabbage is a type of vegetable consumed in almost every Thai household because it is affordable, flavorful, and widely available. Furthermore, Thai consumers can cook cabbages in a variety of ways, thereby adding to its appeal. As a result, cabbage has become one of the top ten vegetables that are commonly produced in Thailand because of its popularity all year round.

The total market size for cabbage in Thailand is estimated to be 32 billion Thai Baht per year. It has generated a large amount of revenue across all relevant supply chains. Despite the fact that cabbages can be locally grown, however, surprisingly almost 100% of the seed must be imported. Thailand is not suitable to invest in research and development for cabbage seed. To succeed in a cabbage breeding program and seed production program, suitable production area, a congenial environment, and stable parent lines are needed. (Fang, 2008) From the past until the present day, many domestic seed companies have tried to breed cabbage. However due to several factors, it is not yet successful. Therefore, many seed companies rather choose to import the seeds instead of breeding by themselves.

In reference to cabbage seed import and export statistics from 2012 – 2015 (Thai Seed Trade Association (THASTA), 2016), it also shows that while imported cabbage seed quantity remains constant, the usage of the cabbage seeds in domestic areas has gradually decreased over the past four years. A greater share of the seeds has instead been shifted as re-exported products to other countries, especially to Indonesia.

Therefore, the marketing strategy for cabbage seed in Thailand will be more challenging for seed companies in light of the decline in seed usage that is the result of many reasons. These are some of the factors which has led to this research.

This study is a contemporary topic in applied marketing which is relevant to the subject of international business. The findings will help all agricultural sectors and interested parties, especially in cabbage seed section, better understand the overall market and the characteristics of cabbage growers. It will also be a guideline to help develop effective marketing strategies and better quality seeds that will satisfy, not only the growers, but also the end consumers' needs and expectations.

1.2 Research Objectives

1.2.1 To understand cabbage market in Thailand, particularly seed section

(1) To understand reasons why almost 100% of cabbage seed needs to be imported from overseas even though it can be locally grown to fresh produce in Thailand

(2) To study the current cabbage seed market situation and existing seed companies that sell cabbage seed

1.2.2 To understand the cabbage seed market structure and supply chains

(1) To understand market structure and the people or actors involved in the supply chain from production to consumption.

(2) To identify people in the supply chains who play the most important role on importing seed every year

1.2.3 To understand cabbage seed varieties which are currently offered by suppliers from overseas and used in Thailand

(1) To understand which countries are experts in breeding and producing cabbage seed

1.2.4 To identify growers' purchase criteria for cabbage seed in order to meet end-consumers' needs and expectations

(1) To identify key factors influencing cabbage growers' purchase decisions of imported cabbage seed

(2) To identify other external factors which are uncontrollable from neighboring countries that have an impact on cabbage growers' purchase decisions of imported cabbage seed



CHAPTER 2

REVIEW OF LITERATURE

As part of secondary research, a literature review is summarized as below. The topics cover an overview of the development of Thailand's agricultural sector, cabbage seed import and export statistics, reasons that make cabbage seed import necessary and issues about the cabbage market in Thailand.

2.1 Review of Literature

2.1.1 Thailand agricultural sector development

Thailand has always been developing through agricultural production. Many people take part in the agricultural sector and these people were the majority of the 70 million population who have continued to rely on agriculture as part of their livelihood. Also, at least 30% of the total land in the country is now used for agricultural activities.

The agricultural sector has long been the most important part of Thailand economy. It is the largest employer. People often call it the country's backbone because it has generated food and income to the majority of Thai people. Before the manufacturing sector played an important role in the Thai economy in 1970, almost 100% of export income was generated from the agricultural sector. Although now the export from agricultural sector has decreased and has a share of only 30% of the total export, the majority of Thai labors are still employed in the agricultural sector. (Singhapreecha, 2014)

2.1.2 Import and export statistics of cabbage seed

Thailand's food and agricultural industries have big influences on Thai people life. People still focus on agriculture and to many of them, agriculture has been passed down from generation to generation. Every year, the food and agricultural industries generate many billions of Thai Baht to economy value. (National Science and Technology Development Agency (NSTDA), 2015) In order to have enough food supply to all people in the nation, seed is needed. Seed is where food begins. However, Thailand cannot breed and produce all kinds of seed. Therefore, we still need to import many of the seed varieties from overseas, especially cabbage seed. Every year, cabbage seed is almost 100% imported and among those imported, it is considered to be one of the most valuable seeds. In reference to cabbage seed import and export statistics from 2012 – 2015, it shows that while imported cabbage seed quantity remains constant, the usage of the cabbage seeds in domestic areas has gradually decreased over the past four years. A greater share of the seeds has instead been shifted as re-exported products to other countries, especially to Indonesia. (Thai Seed Trade Association (THASTA), 2016)

2.1.3 Reasons that make cabbage seed necessary to be imported every year

For a successful cabbage seed production program, suitable production area, congenial environment, and stable parent lines are needed. (Fang, 2008) In Thailand, many of the seed companies have already invested in research and development for breeding cabbage seed. However, due to many conditions which are not suitable, the process takes time and yet the result cannot be guaranteed, for which they need to reconsider and instead choose to import seeds from other countries, such as Japan who are expert on this instead of breeding by themselves. The main condition that makes Thailand a less than ideal location to invest in cabbage breeding programs is its temperature. Thailand is not cold enough for cabbage to flower. It can only grow until the heading step which is the fresh produce that we eat. After heading, and before flowering, the plant dies. Therefore, when the cabbage cannot make flower, the seed will not appear. Even in the north of Thailand, the temperature is cold but it is not stable

enough every year. It is hard to predict and the research can only be done once a year because Thailand only has one winter time. (Thai Kasetsart, 2012)

2.1.4 Issues about cabbage market in Thailand

Due to the ongoing integration into the ASEAN Economic Community (AEC), both opportunities and challenges exist for Thailand, especially in agricultural sector are presented. (SCB Economic Intelligence Center, 2012) AEC has been enabling and allowing easier movement of goods, services, investments, capitals and people. For the cabbage market, this has a great impact. The impact of cheaper imported fresh produce cabbage from neighboring countries that could enter Thailand easily has put pressure on Thai prices. Many cabbage growers suffered from the loss and needed support because it was all they had. (Thairath News, 2015)

There are many factors that influence the cabbage market in Thailand, one of which is fluctuations in price of the fresh produce. (Simummuang Market, 2017) Growers, especially those in remote areas, face obstacles of not getting sufficient information and knowledge on current market situation, price signals, grading system, etc. A lot of the time, they are put under price pressure and are obligated to accept low prices. In the end, they earn very low income. To help support the growers in this situation, market access, market efficiency and market integration should be improved. These are crucial as they would enable growers to take advantage on any market opportunities and earn higher profit in the future. Thai growers already have experiences, they have been growing cabbage since when they were born, but what there is a lack of, is knowledge on farming technique, farm business management and technology know-how. They just do it the way they were taught from generation to generation. Therefore, if they are being educated in an appropriate way, they will surely be able to increase bargaining power and reduce production cost at last. (Hruzova, 2002)

CHAPTER 3

RESEARCH METHODOLOGY

This research focuses mainly on the key factors influencing Thai growers' purchase decisions of imported cabbage seed. So, in order to achieve all of the objectives stated previously, an exploratory research method was used to collect data as steps below.

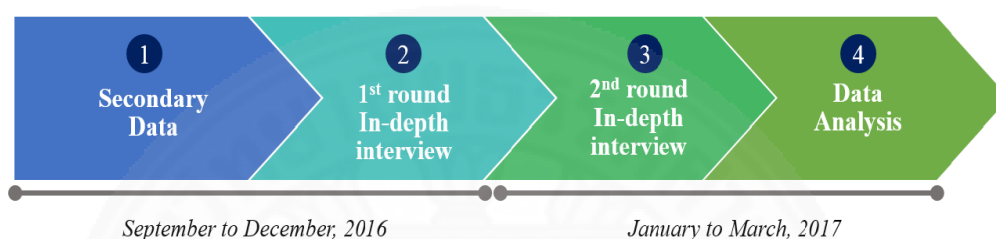


Figure 3.1: Research Methodology

This research study is divided into two parts. The researcher firstly gathered information from secondary data sources and then conducted a comprehensive reading and analysis of all related topics and studies that were found. This has given a better understanding of cabbage market in Thailand, particularly seed section. By gathering data in the first step, the researcher was able to come up with some ideas and predictions on how things were like, for example the current market situation, pricing and cabbage fresh produce grading systems, etc. After completing the first step, the researcher moved on to the second step which was validating ideas and predictions by conducting in-depth interviews with cabbage growers, collectors and fresh produce wholesalers in order to analyze whether or not the previous studies were true or similar to what have been gained from the in-depth interviews. Therefore, exploratory research method was to gather more information regarding the key influencing factors on selecting cabbage seed and the key challenges that the growers were facing over the past few years.

Due to many limitations, this research was conducted only through qualitative research methods. To explain, it was quite complicated to distribute all questionnaires to respondents within this limited time. Cabbage is not like other kinds of vegetables that can be grown at any place or be seen almost anywhere. It actually needs specific areas to grow. It can only be grown well in cold weather. The colder the weather, the

higher the yields. Therefore, more than 85% of cabbage growers and collectors live very high up in the mountains especially in Chiang Mai, Mae Hong Sorn, and Chiang Rai province. These people sometimes do not have Thai nationality. A lot of them are local tribe people whom face language obstacles. Some of them can speak Thai, but cannot read Thai. Moreover, the questionnaire could only be conducted offline as these people prefer a face-to-face discussion rather than online processing. So, the researcher found it difficult to conduct quantitative research and thought interviewing some growers and collectors would be more effective in gaining all needed information. In addition to that, the grower fields are far apart from one another, so the researcher could only wait at the collectors' house where the growers would come and bring in cabbage and other fresh produce to sell. The researcher couldn't visit all growers one by one. By waiting at the collectors' house, the number of growers coming by each day couldn't be guaranteed. Someday a lot of growers might come, but someday only a few might come. Therefore, this was the main obstacle in conducting quantitative research and the reasons why the researcher chose to do qualitative research instead.

For cabbage fresh produce wholesalers, there is no obstacle. They live in the cities of Ratchaburi and Bangkok, but as there are only a few main wholesalers in the market. In-depth interviews were conducted instead of distributing questionnaires to gain insights.

3.1 Secondary Research

Secondary data were obtained from internet, newspapers, articles and books. It was conducted to get an overview of Thailand agriculture as well as cabbage market, particularly emphasis was paid to the seed section which enabled the researcher to come up with all possible variables used in in-depth interviews questions in the conducting of primary research.

3.2 Primary Research

3.2.1 In-Depth Interview

The in-depth interviews represent the most important part of this research study. The interviews contained many open-ended questions and focused on

how cabbage seed was distributed to growers who are the users. To achieve the objectives, Probing and Prompting techniques were used to obtain meaningful information. The above techniques had encouraged the respondents to speak up and explain more about their opinions and at the same time to help cracking out specific details that they have not mentioned yet. Please see Appendix A for the Question Guide for In-Depth Interviews.

The 1st round of in-depth interviews were conducted during September to December 2016. After the 1st round, question guide was further developed and used as a guideline for the 2nd round of in-depth interviews during January to March 2017 as well. This question guide helped to make sure that the interviews have covered all key variables and executed smoothly.

3.3 Sampling Plan

The target respondents in this research study focused on 3 key people in the supplier chains which were growers, collectors, and fresh produce wholesalers as they play an important role on importing cabbage seed every year. The growers and collectors were selected from the northern part of Thailand. This area is the main growing area for cabbage, so they could represent as a whole. While the wholesalers were from Sri Muang Market, Ratchaburi and Talad Thai Market, Bangkok. These markets are Thailand's largest, international standard wholesale and retail market for food products and all agricultural produces. The respondents were the one who actually use the seed (growers) and the one who purchase the fresh produce (collectors and wholesalers), so they could define criteria they expect to have and know the key factors that influence their purchasing decisions.

3.4 Data Collection

Due to limitation of time, financial and location constraint, respondents were selected through non-probability sampling and were acquired through personal connection. The in-depth interviews were face-to-face and phone interviews, which took approximately 30 minutes per each interview. The face-to-face interviews were taken place at the collectors' house, the place where cabbage growers came and brought

in fresh produce to sell. It was like the gathering place of cabbage growers before their fresh produce would be piled up in the trucks and sent out to local markets. Meanwhile the fresh produce wholesalers were interviewed right at the market where all fresh produce was gathered before distributing to its final destinations.

3.5 Data Analysis

Because this research study was only done through in-depth interviews, the gathered data was at first unstructured. The researcher had to manually classify them into groups for better explanation and understanding. The insights on factors that influence cabbage seed purchase decision such as fresh produce price, and resistant to transportation of the fresh produce, were used to analyze according to the objectives. Collected data from the in-depth interviews were analyzed and summarized individually to define the key findings.

The key variables of this research study include: 1) Cabbage growers' needs and expectations of seeds in order to satisfy end-consumers' purchase criteria, and 2) Other external variables which cannot be controlled such as the opening of the AEC, and the impact of cheaper imported cabbage from neighboring countries to Thailand that put pressure on Thai prices.

3.6 Limitations of the Study

This research topic is very specific. Only a few people know about cabbage market in Thailand and how it works, therefore many limitations occurred during the process of conducting the research. The limitations are as follow:

1. Time and location constraint

Growers and collectors live in the mountain which is very far in the north and from the city center, making it difficult for the researcher to visit them often. Instead, the solution was to arrange and interview the rest of them via telephone after coming back to Bangkok. However, it was still not like visiting and witnessing things with one's own eyes.

2. Language constraint

Language was considered to be a little bit of the limitation as many respondents were local tribe people who sometime provided information in their local dialect. Therefore, it was quite difficult for me to understand the whole messages and take notes. So, the solution was to go together with my colleagues, who work as product development staff, and have a closer relationship with them to help me communicate.

Overall, the limitations mentioned above were not big deal. They did not affect the findings and result of this research. However, in the future, for further study, the researcher would suggest to also do a qualitative research in other cabbage growing areas such as Chiang Rai, Tak, Mae Hong Son, etc. not only just Chiang Mai. Unfortunately at the moment, there was not enough time. Although cabbage growing areas in these provinces are not as big as in Chiang Mai, the researcher believes some new and different insights can be found as well.

CHAPTER 4

RESULTS AND DISCUSSION

During the process of collecting data, the researcher has been travelling to Chiang Mai where most cabbage growers and collectors are. This area is not in the city center, but it is a remote area which is very high up on the mountain and have the most suitable growing condition for cabbage. Before being able to find out key factors influencing Thai growers' purchase decisions of imported cabbage seed, it is very important to firstly understand clearly about cabbage supply chain and the people involved in it.

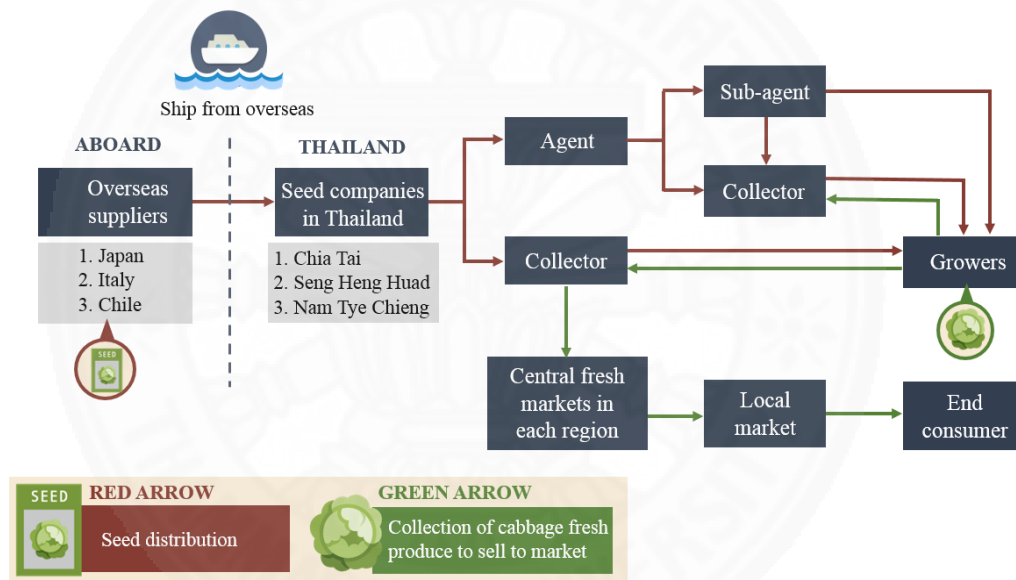


Figure 4.1: Cabbage Supply Chain in Thailand

According to Figure 4.1, below are steps and people involved in the supply chains since the beginning, when cabbage is still a seed until the end, when cabbage seed has become fresh produce and ready to distribute in wholesale and retail market.

1. Suppliers from overseas

Almost 100% of cabbage seed needs to be imported from overseas and most suppliers are from Japan, Italy and Chile. Japan is well-known for breeding cabbage. They have been researching and developing brassica crop for a long time. With their experiences together with suitable weather condition that is cold almost all year round, cabbage seed can be produced easily. However, due to high seed production cost in

Japan, many Japanese seed companies shift their production base to other countries such as Italy and Chile instead. These countries have similar growing condition and are also experts on producing cabbage seed, so cabbage seed is mostly imported from these three countries.

2. Seed companies in Thailand

Many of the seed companies in Thailand will source for seed from all over the world. Once they find the best cabbage seed varieties, they will start importing to Thailand. The seed business is a small business wherein everyone knows each other. Thai companies will trade and exchange products with foreign companies because as mentioned previously, Thailand is not suitable to produce all kinds of seed. Therefore, many of the companies mostly have long term and good relationship with foreign companies. The leading seed companies in Thailand that imported cabbage seed are:

1. Chia Tai Company
2. Seng Heng Huad Company
3. Nam Thye Chiang Company

In Thailand, most cabbage seeds that are offered by the seed companies are F1 hybrid seed. F1 Hybrid seed is the selective breeding of a plant. Good characteristics from two parent lines will be selected and cross pollinated, to create a new variety which has better characteristics, or the combination of the good characteristics from the two parent lines. The price of the seed is normally more expensive than the normal seed which we called OP seed or open-pollinated seed. Even if the price of F1 hybrid seed is higher, growers still like to purchase the F1 hybrid seed because it gives better result in term of uniformity in color and size, disease and heat resistant, more definite harvest deadlines, durable in shipping, and longer shelf-life. They are looking for these kinds of qualities as they will earn more profit if their cabbages can be sold easily and meet the requirements of the wholesaler and retailer in the market.

3. Agent

After seed arrives to Thailand, seed companies in Thailand will distribute the seed through a collector and agent. An agent is like a middle person who will pass the seed to sub-agent and small collector, which these two will then pass to grower. The agent acts as a seller only. They do not accept or collect fresh produce back from the growers in order to sell and distribute to the fresh markets.

4. Collector

A collector is a person who purchase seed directly from the seed companies. They will pass the seed to the grower, and will also purchase back fresh produce and distribute to wholesale and retail markets all over Thailand afterwards. These collectors are big collectors that will not purchase the seed through an agent, but will purchase directly from the seed companies. The difference between a collector and an agent is that the agent doesn't purchase back any fresh produce from the grower, but the collector does.

5. Grower

The real user here is the grower. They are the ones who use the seed. These growers consist of both Thai and local tribe. They have been growing cabbage since when they were young. They follow their parent's instructions, and this career is being passed down from generation to generation.

6. Wholesaler

After harvesting cabbage, fresh produce will be sent down to the markets in big cities. The fresh produce will be piled up in a truck and transported to the cities. Due to its distance, it usually takes about 1-2 days until it reaches its destination. During this time, fresh produce will be under bad condition of hot weather and crowding in the truck. Once it reaches wholesales' hand, the lesser the damage of fresh produce, the more satisfied the wholesaler will be.

7. Retailer in local market and supermarket to end consumer

These group of people do not know much about the difference between each of the cabbage varieties. They tend to focus on the appearance. As long as the cabbage doesn't look like an old vegetable, it is alright for them.

4.1 In-depth Interviews Result

After many talks and interviews, the researcher could notice that growers who are the users of the seed are not the only ones who make decisions on purchasing cabbage seed, it is actually collectors and wholesalers in fresh markets as well. These people play an important role on selecting and determining how much amount of seed will be used every year as they represent the marketplace and eventual demand. Therefore, there are more than one decision-making groups in the cabbage market. In order to obtain as much insights as possible, 11 in-depth interviews were conducted with growers, collectors and fresh produce wholesalers. 5 growers and 3 collectors in Chiang Mai, cabbage main growing area were interviewed. 2 wholesalers at Sri Muang Market (Ratchaburi) and 1 wholesaler at Talad Thai Market (Bangkok) which fresh produce from Chiang Mai is delivered to, were interviewed. The interview results were quite similar among these three respondent groups. “Cabbage fresh produce price” is the key factor all respondents concern about, as it determines how much profit they will earn. Prices go up and down because of supply and demand in the market. They said this is very normal in vegetable market. Fluctuation in price is the issue they face with every year, but this year, it comes more often than usual. The second thing that most respondents mentioned is “The importance of cabbage fresh produce appearance” as in the end, people don’t consume seed, but they consume fresh produce. The fresh produce should look fresh and green. The more weight, the more beautiful it looks, the more profit people in the supply chains will earn. To conclude, these issues basically started off with seed. Seed is where quality food begins. Good cabbage seed variety can bring satisfaction to everyone in the supply chains, especially the growers who are the user and the end-consumers who consume the fresh produce.

4.2 In-depth Interviews Key Finding

The cabbage supply chain in Thailand is complex. Many people are involved in it. The table 4.1 below further illustrates each person's role and their importance on making decision when purchasing imported cabbage seed. A framework of the decision making unit (DMU) is also used to explain in this chapter.







Cabbage Supply Chain in Thailand					
From seed to fresh produce (production part)				Fresh produce (selling part)	
					
Suppliers from overseas	Seed companies in Thailand	Middleman/Reseller	Growers	Central markets (Wholesale and retail)	Local market and supermarket (Retail)
Breed and produce seed	Source and import seed	Distribute seed through agent and collector (Collector buys back fresh produce from grower, but agent doesn't)	Use seed for planting	Big market in major cities where fresh produces are sent to before distributing to other markets	Local markets and modern trade stores
Needs and Expectations					
	Seed Good variety that is accepted by the collector and grower	Seed <u>Agent</u> Good variety that is accepted by grower. <u>Collector</u> Good variety that is accepted by grower and wholesaler.	Seed Resistant to disease and heat, good quality seed and fresh produce, high yield,	Fresh produce Good quality of fresh produce, look fresh, green and doesn't look old, resistant to transportation	Fresh produce Good quality of fresh produce, look fresh, green and doesn't look old, long shelf life
Cabbage Seed Decision Making Unit (DMU)					
	INITIATOR GATEKEEPER	DECIDER	INFLUENCER BUYER USER	INFLUENCER	INFLUENCER

Table 4.1: Cabbage Supply Chain and Decision Making Unit (DMU)

Influencers

Wholesaler and retailer

After harvesting, fresh cabbage will mainly be sent to wholesalers at fresh markets, so they are the one who can exert influence on purchasing process of cabbage seed. Apart from the wholesalers, some preconditions such as long-shelf life, transport resistance, etc. are also requested from the retailers. The wholesalers need to meet the retailers' requirements, to which they will just follow what the retailers ask for to make them accept the products. This is then brought back to collectors. The collectors need to find the cabbage seed variety that matches all these preconditions set by the two key people in the supply chains.

Grower

The grower is also another key person who has influence on deciding cabbage seed variety. They need the seed which is suitable to grow in the area where they are. The seed needs to be resistant to disease and heat, give out good quality of fresh produce, durable when shipping and distributing throughout Thailand, etc. To conclude, seed performance is very important. The performance should be good both in the field and as a fresh produce so that the growers would satisfy and able to earn profit from it.

Decider

Agent and collector

The agent and collector are responsible for choosing suppliers which in this case is the seed companies in Thailand that provide cabbage seed. They take up an important position, so they have to make sure that growers will be satisfied with the seed performance of the cabbage variety they choose and the wholesalers will be satisfied with the cabbage fresh produce after buying from the collectors.

Buyer and User

Grower

Majorly, the growers are both buyer and user. They buy seed from what has been chosen by agent and collector and they are actually the ones who use the seed. Therefore, they will exert influence on the specifications of the seed, which in this case, are an influencer as mentioned in the influencer part.

Initiator and Gatekeeper

Seed companies in Thailand

Seed companies in Thailand recognize the problem that cabbage seed can't be produced in Thailand. So, they try to find a solution for this problem by sourcing from overseas and use long term relationship they have with foreign companies to negotiate. Apart from being an initiator, they are also a gatekeeper, responsible for information provision. They do market surveys for the needs of growers and wholesalers first. They do sourcing worldwide, and then they select only the best one from hundreds of varieties that really suit the condition in Thailand.

According to the in-depth interviews, many obvious findings were discovered. Here are what the respondents mentioned about most frequently regarding to cabbage seed and cabbage fresh produce. The following interviews are a rough literal translation of the interviewee responses.

1. Fluctuation of cabbage fresh produce price

Price is not good recently. But it is normal in vegetable market. Price fluctuates all year round. This is because of supply and demand in the market. However, price does have direct affect to our income, both to me and to the growers who I buy fresh produce to resell to wholesalers from. The fresh produce should meet requirements. If the product is a Grade A product which means it is for fresh consumption, then we can sell with higher price. But, if it is not and use for factory part or processed food manufacturing, then the price will drop down a lot.

Mr. Wittaya, Collector, Chiang Mai

Result shows that price impacts everything. All respondents mentioned about fluctuation in cabbage fresh produce use prices as a key decision. When the price is high, they are happy. But when it is low, it is often too low that they can't even make money out of it as the production cost is higher than the sales price. Some growers have no choice, they just have to leave the matured cabbage in the field without harvesting it because if they harvest it, they will still need to pay for labor cost of cutting and decorating the cabbage heads before distributing to the market. It is not worth it. The change in price happens because of demand and supply in the market. Supply of cabbage fresh produce does not come from the domestic market only, but sometimes it also comes from Thailand's neighboring countries. This cabbage fresh produce can often be sold for cheaper prices as these foreign producers often have government support from their country. Therefore, the impact of too much supply coming in and cheaper imported cabbage price from neighboring countries to Thailand have put pressure on Thai prices. To some growers, this has made them want to shift from

growing cabbage to other crops in which they can make more profit. However, to some, even if the price is low, they still don't want to shift to other crops because cabbage is already part of their life. They were born into this career. So, they want to carry on with what their parents have passed down to them.

How is the cabbage fresh produce price related to Thai growers' purchase decision on importing cabbage seed?

The researcher carried on asking and found that to be able to sell cabbage with high price, cabbage fresh produce needs to look nice. Therefore, "Cabbage fresh produce appearance" is what all respondents see as the most important thing to pay attention to. Its appearance determines how much money they would make.

2. Cabbage fresh produce appearance

All growers said that fresh market doesn't care about how cabbage seed look like, what variety they use, they just care about fresh produce appearance. Therefore, the growers normally use cabbage seed variety that has characteristics which are accepted by fresh market. Now, some cabbage seed varieties that are available in the market is already good. However, they still want something better. The growers still want seed companies in Thailand to bring in even better varieties than the available ones.

Nowadays, wholesalers at fresh markets in many big cities choose a lot. They set up many requirements that cabbage fresh produce should be like this and like that. When the fresh produce reaches their hands, it must still be fresh and have less damage even if it is travelling from a very long distance over day and overnight. If we can't do as they want, they won't buy from us, they will buy from other people and we have no market.

Mrs. Malee, Grower, Chiang Mai

Below are findings of what kind of cabbage seed variety growers and collectors would like to have in order to meet the wholesalers' requirements when selling to the fresh markets.

High yield of cabbage fresh produce as well as its good quality are important.

Growers mainly concern about cabbage seed performance. The better the cabbage varieties, the more profit the grower will get. This is because of its high yield in cabbage fresh produce as well as its good quality. High yield means they get more cabbage fresh produces to sell to the market per one Rai and also each of the cabbage head weighs more as the fresh produce is sold in kg.

Cabbage seed must be resistant to disease and heat and also adaptable to condition in Thailand.

Thailand is a degraded cultivation areas. We have cultivated repeatedly, over and over again. So, the soil has been harmfully destroyed. This has created difficulty to us when planting new crop. Many of us need to find new land for planting next crop which is sometime far away from where we live. We have to do it because if we plant in the same land, the crop might be damaged and effected by many diseases.

Mrs. Nuan, Grower, Chiang Mai

Every grower is looking for cabbage seed varieties that are resistant to all diseases because of low soil quality in their plantation areas that has already been infected by many diseases. Now, they solve the problem by moving to a new location to grow the next crop. The growers and collectors think it would be better to have new variety that is more resistant to the disease and heat and also cause the least damage when planting in the field. When cabbage field is being damaged by the disease, the growers can't sell cabbage fresh produce that is being damaged or sometimes even worse, the disease might spread through the whole field which in this case the grower

will lose everything. In addition to that, due to many external conditions that are uncontrolled, it is very important to have the cabbage that is resistant and able to survive in this environment like hot weather in Thailand. Figure below shows cabbage diseases which are commonly found in Thailand. Many of the farmers suffered and lost from this as their fields were being attacked and the diseases spread out quickly.



Figure 4.2: Black Rot and Alternaria Leaf Spot in Cabbage

Resistance of cabbage fresh produce to long distance transportation is top issue to concern

Because cabbage is mainly produced in the northern part of Thailand that is high up on the mountain, fresh produce is transported from a very long distance. When distributing throughout Thailand, the longer time and distance it takes, the more damage the cabbage will take. As a result, the cabbage should be strong enough to stay fresh until it reaches wholesalers' hands. The least damage it contains, the higher the profit will be as the wholesalers won't have to cut out many leaves, so the weight will remain the same. Note that cabbage is sold by weight in kg, so the weight is important.

Below shows the steps of cabbage after harvesting till the end which is nicely-packed in a bag and ready to be distributed to end-consumers. It also shows the reason why the growers and the collectors need cabbage seed varieties that is resistant to transportation and/or durable when shipping from one place to another.



Figure 4.3: Matured Cabbage in the Field



Figure 4.4: Harvested Cabbage Ready to be Transported to Collectors by Small Truck

When growers harvest, they will cut out some leaves (4-6 leaves) and leave about 6-8 leaves, which they then send to collectors. About 2-3 tons of cabbage will be piled up in a small truck prepared to be delivered to the collectors.



Figure 4.5: Transferring Harvested Cabbage from Small Truck to Big Truck and Transporting to Fresh Markets in Thailand

Cabbage on the first truck from the grower field will be moved and piled up again in a big truck. The cabbage will be transported and distributed to fresh markets in big cities such as Bangkok, Ratchaburi, etc. The transit time is 12 hours from Chiang Mai to Bangkok and 15 hours from Chiang Mai to Ratchaburi. Note, some of the semi-finished product will also be transported down to the south.



Figure 4.6: Piled Cabbage in a Truck After Arriving to Fresh Market

This is how cabbage looks like when it arrives to Mrs. Taew, wholesaler at Sri Muang market, Ratchaburi province. After the arrival, the people there will cut out 3-5 more leaves depending on how many leaves are damaged during the transportation from Chiang Mai. So, the more leaves they cut out, the more weight the wholesalers will lose and the less profit they will get. This time it is very important as it is the time which determines how satisfied of the cabbage fresh produce, the wholesalers are.

I normally buys about 15 tons a day from Mr. Narong, collector from Chiang Mai. I want cabbage that has thicker leaf so that it is more resistant to transportation and has less damage. The more damage, the more leaves I have to cut, the more weight I lost and the less profit I earn. After cutting, I still need to send cabbage down to the southern markets which is another 12 hours or more, so the cabbage should be compact and strong!

Mrs. Taew, Whosaler, Sri Muang Market (Ratchaburi)



Figure 4.7: Packed Cabbage in Plastic Bags After Cutting



Figure 4.8: Before and After Cutting Cabbage

This is how cabbage looks before and after cutting. They have to cut until the leaves are beautiful and have no damage. So, the thin leaf cabbage varieties will be taken out more as it has more damage from transportation. The thin leaf cabbage is usually softer than the hard leaf cabbage, so when it is piling up in a truck and pressing inside it will be damaged easier. Therefore, the wholesalers normally choose to order hard leaf type from the collectors to prevent the weight loss.

All in all, this is to demonstrate that when a lot of cabbage leaves are being cut and throw away, the weight will be lost. Once the weight is lost, it means that wholesalers profit will be decreased as well. Next time, they will remember and will not want to order from the same collector again. This will then effect to growers who sell the fresh produce through that collector or who are in the chain of that collector. Therefore, the growers always say that they need to have good cabbage seed varieties to meet the many requirements of the wholesalers, and have them accept their fresh produce as they have nowhere to sell and have to rely very much on the wholesaler.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, by talking to 11 respondents in the supply chain of the cabbage market, the researcher has learnt that the best way to understand how things work was to talk to all people who were involved. These people have provided information little by little until the researcher could see a big picture. Once the problem was understood and known where it was, then we would be able to solve it right to the point. From the data analysis and result of key factors influencing Thai growers' purchase decisions of imported cabbage seed, the researcher would like to conclude as follows:

Cooperate with suppliers from overseas for research and development on new imported cabbage seed varieties

The result shows that growers are concerned about seed performance more than anything else as this is a bunch of money they need to invest in. Not only talking about the seed, but also the land preparation, the equipment, the labor cost, etc. These are part of their production cost. They also look to the future, to the end result that fresh produce should have good quality and can be sold to fresh market easily. Cabbage should have high yield because that means the more profit they will make. Some growers don't have much money, sometime they have to borrow seed from collectors first, then deduct the value of seed out of the fresh produce that they have to return after harvesting. In case of crop fail or the diseases are spread out through the field, the growers will lose all they have invested. Therefore, the seed companies in Thailand should continue working on this. They should cooperate with suppliers from overseas for research and development on new cabbage seed varieties that are improved varieties of the previous one. Then, introduce it to the Thai market.

Seed companies in Thailand should set a team to follow up with market situation and trials result of new seed varieties

After cooperating with supplier from overseas, they will send some sample seeds for trial in Thailand. Seed business is not like other businesses. It normally takes about 3-4 years until new varieties can be launched and sold. Sometime, the seed that

the suppliers breed from overseas may not work once being trialed in Thailand. Therefore, at the same time, the seed companies in Thailand should also work closely with the growers and collectors in order to update market situation and follow up with all trial results. Product development is essential in the seed business. As it takes time to improve one product, we should start ahead of time or as fast as possible.

Supply of cabbage fresh produce to the market should be controlled to prevent fluctuation in price.

Because there is an influx of imported cabbage from our neighboring countries, it often causes oversupply problems for the cabbage market in Thailand. It is difficult for Thai growers to survive in this competitive price driven market. Therefore, the researcher thinks at some point there should be control in the supply of cabbage fresh produce entering the market and also the stable price of cabbage. It is recommended that the government should set a price floor to prevent growers and collectors from being lost from low price.

In conclusion, agriculture has been closely connected with the Thai people since when the country was young. Thailand is an agriculturally based country. Many of the people here work in agriculture as part of their life. The career and all the growing techniques have been passed down from generation to generation. Therefore, the researcher thinks it would be great if all parties could help support these people who work hard for us to earn more income and have better life in any way we can support.

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APPENDIX

APPENDIX A
QUESTION GUIDE FOR IN-DEPTH INTERVIEW

1. Please briefly tell us about your profile.
2. How long have you been growing cabbage?
3. How is your cabbage production this year?
4. What is the current market situation of the fresh produce?
5. How is cabbage fresh produce price? Is there anything that effect on the price?
6. What are the problems that you are currently facing and what improvement would you like to have?
7. Which company do you purchase cabbage seed from?
8. Why do you use the seed from this company?
9. Who do you buy the seed from?
10. What are the key factors that influence on choosing cabbage seed variety to plant in your field?

BIOGRAPHY

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