THE SUPPLY CHAIN MANAGEMENT OF POMELO PRODUCTION PROCESS IN NAKHON CHAISRI, NAKHON PATHOM PROVINCE, THAILAND

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THE SUPPLY CHAIN MANAGEMENT OF POMELO PRODUCTION PROCESS IN NAKHON CHAISRI, NAKHON PATHOM PROVINCE, THAILAND

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ABSTRACT

This study aimed to 1) identify the supply chain management characteristics of Pomelo production process in Nakornchaisri 2) form a supply chain management model of Pomelo production process in Nakornchaisri 3) bring the supply chain management model to use in the practice of supply chain management of Pomelo production process in Nakornchaisri. The samples were 609 farmers who cultivated Pomelo in Nakhon Chaisri. The study was conducted by mixed method, quantitative and qualitative research, the data analysis; percentage, mean, standard deviation, the principal component analysis and varimax rotation. Quantitative research had showed that most of the farmers are female, aged between 31-40 years old. They have 11-20 years of experience in Pomelo farming. They have arable land area of 1-5 rai, average income per year about 50,001-90,000 baht. The composition of the supply chain management of Pomelo production process is composed of 5 components: 1. Planning (Eigenvalues = 7.494), 2. Production (Eigenvalues = 6.609), 3. Procurement (Eigenvalues = 6.336), 4. Transport and return (Eigenvalues = 5.445). 5. Development and networking (Eigenvalues = 5.181), respectively. The qualitative research had been used phenomenology method by in-depth interviews with 9 key informants located in Nakhon Chaisri found that the SCM model of Pomelo production process was appropriate to the size of the farmers. This is to promote the Pomelo SCM model by community participation, which will contribute to the problem solving and resource mobilization. The results of this research are an important way to make business in Nakhon Chaisri, success in self-reliance. It is also a way for farmers to develop in accordance with the circumstances of the external environment of business competition. The supply chain management model of Pomelo with the use of information technology in the process. This resulted in the development of the Pomelo supply chain management model.

Keywords: Supply Chain Management, Pomelo, Nakhon Chaisri, Nakhon Pathom Province, Thailand

INTRODUCTION

Thailand has a total area of about 44,000 rai. The total area is about 500,000 tons; the usual yields throughout the year. But between August and October, it is very productive to market. The fruit is long shelf life. It has the advantage of exporting. Exports of Pomelo to foreign countries in Thailand are estimated at 1.2-1.3 thousand tons per year. (Office of Agricultural Economics, Ministry of Agriculture and Cooperatives, 2015)

Thailand has been a major exporter of Pomelo for a long time, and its export value has continued to grow Pomelo for exporting to foreign countries was estimated at 1.2-1.3 thousand tons per year. Major importers include China, Hong Kong, Singapore and Taiwan, with the development of Pomelo production to GAP. After the opening of the Pomelo market, Thailand will be able to compete with the counterparts and able to hit the market. It is expected that the volume and value of Thai Pomelo exports to other countries will increase. The export value is 200 million baht per year (Department of Agriculture, 2016).

From this Pomelo export consideration, using the 2012 database (export value of about 137.01 million baht), the export value of Pomelo in 2012-2014 has increased at an average annual rate. 95% market share and 5% export value. Exports to the Chinese market accounted for 60%. In 2012-2014, the value increased by 37%. The potential markets were Vietnam and United Arab Emirates. The Non-tariff trade partners (NTBs and NTMs), such as import certification, technical specifications, quality assurance. The quality of Pomelo is enhanced by the transfer of appropriate technology to develop export patterns in fresh, chilled and ready-to-eat foods. That can promote Pomelo export market.

From that reason, researchers are interested in studying the supply chain management of Pomelo production process in Nakornchaisri, the area where farmers farmed Pomelo, which is grown in Nakhon Chaisri, Sampran and Phutthamonthon, Nakhon Pathom Province. Nakhon Chaisri Pomelo is the fruit which the Department of Intellectual Property issues patents "Geographical Indication" or GI, which is popular and widely consumed Nakhon Chaisri Pomelo. There are 5 breeding lines; Thongdee, White honey, Khao Phuang, Khao Pan, and Khao Hom. (Department of Agriculture, 2016).

The government and private sectors have encouraged farmers to develop the standardization. It is the demand of the international market including the publicity of Nakhon Chaisri Pomelo to be known and consumed by the general public as well as more export products. The important thing is that farmers are still facing to Pomelo SCM problems. The lack of good management because there is no study to analyze problems in Pomelo SCM production process such as moving goods, information flow and the flow of funds to the risk sharing. In case of moving goods, market structure and competition process and technology, product channel. Office of Nakhon Pathom Province. (2013). The briefing of Nakhon Pathom Province, 2013. (Office of Nakhon Pathom Province. (2013).

Therefore, the promotion of the Pomelo farmer in Nakhon Chaisri, participate in the development of Pomelo to provide the Pomelo SCM. The efficient and quality can produce Pomelo and find new ways to reduce production costs from upstream to downstream. Farmers who farm Pomelo will have to develop and strengthen the capacity to produce it.

Research's objective

- To identify the supply chain management characteristics of Pomelo production process in Nakornchaisri.

- To form a supply chain management model of Pomelo production process in Nakornchaisri.

- To bring the supply chain management model to use in the practice of supply chain management of Pomelo production process in Nakornchaisri.

LITERATURE REVIEW

Supply Chain Management

Jones and Riley (1985) provide a supply chain definition; planning and controlling the flow of all raw materials from the supplier to the manufacturer and the distributor to the consumer.

Stevens (1989) defines supply chains as a series of activities connected which involves planning, collaboration controlling raw materials and goods from the supplier of raw materials to consumers.

Scott and Westrook (1991) have defined the supply chain as it is the chain of connection of the components of the production process and supply flow from raw materials to consumers.

Lee and Billington (1995) have defined the supply chain as the network of facilities enables the production of raw materials to be processed into the final product and the delivery of the product to the customer in the range of supply production and distribution.

Voge et al. (2005) argue that supply chain is a process of integrating or integrating various organizations involved, transforming raw materials into finished goods, and delivering them to the final consumer. Supply chains also include cost, time, transportation, packing, storage and about the steps in the production process to be able to deliver the goods to the customers properly. At present, supply chains also include items returned after use. These include renewable materials, re-useable packaging, including waste recycling.

Changcharoen Ubonrat (2011: 20) states that the supply chain is a combination of planning and management in every activity, starting with the procurement process, information technology, storage, distribution, transportation, suppliers, manufacturers, including customers, are involved in all relevant business processes, both inside and outside the organization. Each unit can work effectively. At the other end of the spectrum, researchers provide the definition of supply chain management, which refers to the use of systems of organizations, individuals, technologies, resources, information and activities to integrate them, moving goods or services from the supplier to the customer.

Elements of Supply Chain Management

Elements of supply chain management John Langley (2002) has said that the future or supply chain needs to have elements or characteristics that to be addressed, namely customer and demand management. Supply chain performance measurement information technology outsourcing cooperative relationship key strengths and strategies for effective supply chain

Chen and Paulraj (2004) said that the purpose of supply chain management is to develop a research area that will improve understanding of SCM and help researchers understand the critical structure of SCM and its impact on capacity. Supply chain both from theory and observation. Part 1 presents a consistent and structured sequence of knowledge in SCM, which includes key components in SCM. Part 2 is the development of a research framework for SCM. Part 3 addresses the need for theoretical management that shows that a business that does not cooperate with others does not compete in the long run. It can be competitive if the business is conducted in the form of a supply chain. This can add value to the customer through the collaboration between the supply chain members in the planning, raw material control service and data link, there are four main components of SCM: strategic procurement, supply management, logistics integration, and collaborative network
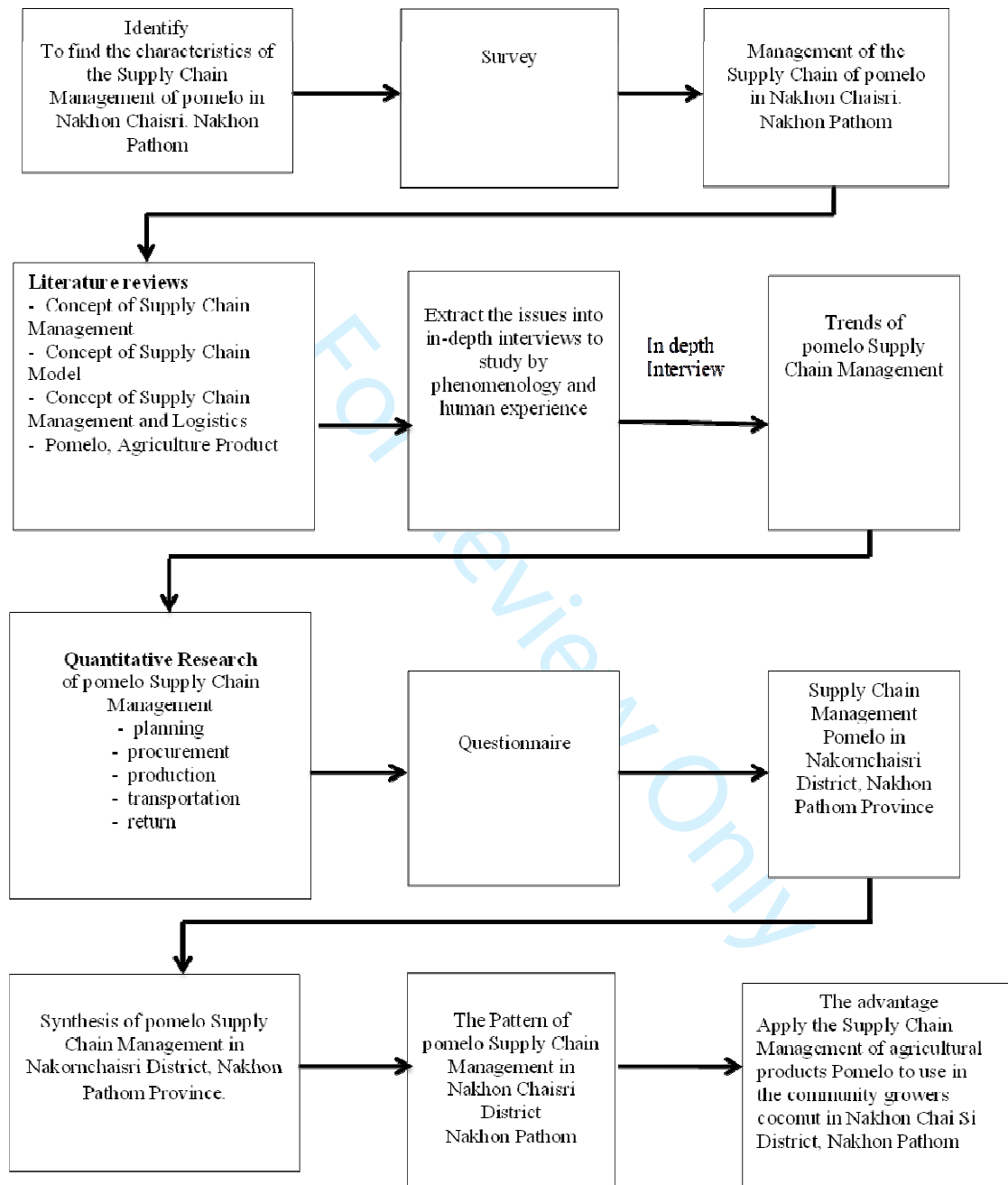
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management. Supply network coordination, including the concept of performance or supply chain performance, including financial performance, operational performance.

Supply Chain Management with logistics

Thailand Development Research Institute (2010) says supply chain management has a broader meaning than the definition of logistics. Indeed, logistics is one of the five key components of supply chain management. This includes links between people involved using information, manufacturing and transportation management in combination with the most efficient business process integration. Supply chain management is therefore an activity throughout the supply chain (both activities flowing up and it flows down the chain). Organize and coordinate activities (as if the central agency is responsible) to ensure that the supply of goods is consistent with demand. Chain of steps sharing of information and technology among all stakeholders contributes to innovation, to reduce the duration of the product development cycle, reduce cycle time, the flow movement of goods and inputs inventory to meet the needs of customers, reduce costs and increase customer satisfaction effectively.

Supply Chain Management of agricultural products

Thailand Development Research Institute (2010) agricultural supply chain management, it focuses on product flow, information and capital flow with risk, factors affecting the flow of goods, the market structure and competition, sales channels, manufacturing processes, product characteristics and logistics. The flow of information will cover the manufacturing process and technology. For capital flow, it will include risk management and risk sharing, review of relevant literature. The researcher took the concept of Pomelo supply chain management in Nakhon Chaisri, Nakhon Pathom province, Thailand.

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Identify To find the characteristics of the Supply Chain Management of pomelo in Nakhon Chaisri. Nakhon Pathom	→	Survey	→	Management of the Supply Chain of pomelo in Nakhon Chaisri. Nakhon Pathom

Literature reviews - Concept of Supply Chain Management - Concept of Supply Chain Model - Concept of Supply Chain Management and Logistics - Pomelo, Agriculture Product	→	Extract the issues into in-depth interviews to study by phenomenology and human experience	In depth Interview →	Trends of pomelo Supply Chain Management

Quantitative Research of pomelo Supply Chain Management - planning - procurement - production - transportation - return	→	Questionnaire	→	Supply Chain Management Pomelo in Nakornchaisri District, Nakhon Pathom Province

Synthesis of pomelo Supply Chain Management in Nakornchaisri District, Nakhon Pathom Province.	→	The Pattern of pomelo Supply Chain Management in Nakhon Chaisri District Nakhon Pathom	→	The advantage Apply the Supply Chain Management of agricultural products Pomelo to use in the community growers coconut in Nakhon Chai Si District, Nakhon Pathom

Picture 1 Conceptual Framework

METHODOLOGY

Population and sample

The population used in this study included: farmers planting Pomelo live in Nakhon Chaisri, Nakhon Pathom province. For the sample, the researcher considered the characteristics of the research data that required the use of advanced analytical statistics, exploratory factor analysis, to determine the size of the samples. The sample size is about 10-20 people per sample parameter (Hair, and other, 2010). The samples were used as Pomelo growers in Nakornchaisri, Nakhon Pathom province. There were 40 variables used in the study. The sample size was 15 persons per observation variable. Therefore, the sample size was 600 samples

Research instruments

This research uses the questionnaire as a tool to collect data. The questionnaire is divided into 4 parts of Pomelo supply chain production process and open-ended questions. The questionnaire was designed by Likert (rating scale), each of which was divided into 5 levels; the highest, the high, the average, the low and the lowest.

Researchers have examined the quality of tools.

1. Content validity by bringing the questionnaire to the experts for consistency, coverage of questionnaire with objectives of research, terminology and language suitability of the questionnaire. By definition, the index of consistency of each question with the objective (Index of Item-Objective Congruence: IOC) from 0.50 to (Pasunon Prasopchai, 2012: 224), then consider the question, the recommendation of the experts and develop a model of tools to suit the next use. From the test, the IOC value is 0.85 or higher.

2. Analyze the reliability of the tool. The reliability of the questionnaire was used to collect data from 50 samples. The data were tested by Cronbach's Alpha (Cronbach's method) (Srisaard Boonchom, 2011). It was found that the reliability coefficient of alpha 0.90, which means that the reliability of the questionnaire is greater than 0.7, indicating that the test population has a consistent score of close to 1, indicating that the test has a high confidence level.

3. Data Analysis in this research. Descriptive statistics consisted of frequency, percentage, mean, standard deviation (SD). The score was 4.21-5.00. Score of 3.41-4.20 indicates that the level is very high, 2.61-3.40 score is moderate, 1.81-2.60 score is low and 1.00-1.80 score is the lowest level ((Srisaard Boonchom, 2011: 99- 102) and factor analysis to test the relationship between variables.

This research is a qualitative research by phenomenology (Phenomenology Study), a study of the phenomena and experiences of man, the need to study Pomelo supply chain management production process in Nakhon Chaisri, Nakhon Pathom province of the grapefruit farmers living in Nakornchaisri, Nakhon Pathom province. The study is conducted in the following order.

Primary informer

The main informants are farmers who grow Pomelo in Nakhon Chaisri, Nakhon Pathom province with 9 key informants as a participant in Pomelo supply chain management production process.

Research Instruments

The instrument used to collect this data was the interview form. The researcher chose the most important tools to help complete the data collection. It consists of questions, interviews, notebooks, cell phone pens, researchers and interviewees.

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Data collection

From articles, papers, and research related to the concept of supply chain management to understand the meaning and principles of this concept by in-depth interview. The interviewer interviewed the key informants with questions about Pomelo supply chain management production process. The researcher prepares the questionnaire for the primary informant to provide an opportunity for the primary informant to share his or her experience and independent work. The researcher can add to the need to expand or verify the confidence. Data collected by other means, such as non-participant observation, note taking and the reflection reflects the idea.

Verification of data reliability

To verify the reliability of the data, researchers use data triangulation to prevent lack of credibility and if the information is not enough researchers can collect additional information by checking the data and time difference, different locations and different people. Each person will provide the same information or not, if they do not match, researchers should interview at different times and places to confirm and find information for clarity.

Data analysis

The researcher uses data analysis to generate conclusions based on interview data. Then construct the concept using theoretical principles. It is comparable to supply chain management theory, if it is complete then synthesize the data to find the next step.

RESULTS

Quantitative research

The study of Pomelo supply chain management production process in Nakhon Chaisri, researchers have summarized the results as follows.

1. Most of the farmers are female, aged from 31-40 years old. They have 11-20 years of experience in grape farming. They have more than 1-5 rai of land and earn income more than 50,001-90,000 baht per year.

2. Study on Pomelo supply chain management production process in Nakhon Chaisri found that; the popularity of Pomelo was white gold in most accounted for 43.3% by using the grafting method in propagation process in most accounted for 51.2%. Most planting site of Pomelo, were planted in don for 55.3%. For harvesting, they used the bamboo clear method in most accounted for 52.30%. The disease of Pomelo was a disease of rust in most accounted for 28.7%. The insects enemies of Pomelo were the orange worm in most accounted for 46.7%. For preventing and eliminating pests, it was used the largest numbers of workers at 80.7%. Water used for cultivation was the water or canal water in most accounted for 58.0%. The method for sending water to the Pomelo cultivator was pumping for cultivation with mostly accounted for 61.5%. For hiring, they mostly use the employing two types in accounted for 74.5%. For storage capacity; the period of inactivation is 4 years in accounted for 52.5%. For the cut off time is between in August to September in most accounted for 52.3% with the frequency 4-5 times in the highest number for 59.30%. The practices after cutting is wiping in most accounted for 35.5% with the average yield per year is more than 30, the largest number accounted for 54.0%. It is sold to export companies in most accounted for 40.30%. The quality of the results is the highest grade, 93.5% of the sales. Sell in kilograms in most accounted for 84.6%. Pricing and Pricing Criteria are based on quality in most accounted for 51.4% by the post-sale payment accounted for 84.7%. The transportation method is outsourcing in the account of 72.4%. The marketing knowledge was a professional farmer in most

accounted of 55.3%. The production control was the growing area in most accounted of 40.8%. For the reduction in production costs was keeping the device up for longer in most accounted of 61.5%. The Pomelo pricing was based on the negotiation between buyers and sellers in most accounted for 76.2%.

3. Formulation of Pomelo supply chain management in Nakhon Chaisri, it was found that the opinions of the farmers were divided into five aspects: planning, procurement, production, transportation and return. The overall level is very high with the mean score of 4.03. When consider in each issue it was found in the very high level, sort by average to descending order. The average was 4.12 in return, 4.06 in transportation, 4.03 in production, 3.99 in planning and 3.98 in the procurement.

4. Results of component analysis

Elementary Requirements Testing in Analysis

1) The respondents were asked more than 150 questionnaires (Pallant, 2001). According to this requirement, there were 600 samples.

2) Correlation between the variables above 0.3 and above (Wiersma, 1991). Based on the test, it was found that the correlation between the data variables above 0.3 was 340 pairs.

3) Consider a KMO that is greater than 0.6 and Bartlett's test Sphericity is statistically significant. (Significance) (Burns, 1990), as shown in Table 1.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.649
Bartlett 's test Sphericity	Approx. Chi-Square	7806.124
	Df	478
	Sig.	0.00

Table 1 KMO and Bartlett's test Sphericity

Table 1 shows that the KMO value of 0.649 indicates that the available data is based on the factorial analysis technique and Bartlett's test Sphericity is Chi-square = 7806.124. P = 0.00, rejecting the hypothesis (H0). Therefore, based on the results of the tests, the three basic terms are suitable for the use of component analysis.

The next step is to extract the elements (Factor Analysis) to consider the Pomelo SCM in Nakhon Chaisri. How many elements can be classified without correlation? Varying the Orthogonal axis by the Varimax method, the number of cycles in the extraction of 25 cycles shows the Eigen values greater than 1, and does not show the lower coefficient of loading. 0.3. The Eigen values greater than 1 have 5 components and the last one can describe the maximum variance by 65.764 and the analysis eliminates factor with less than 0.3, only 37 variables were included in the analysis. Scree plot was found to be consistent. The analysis components in the supply chain management of Pomelo in Nakornchaisri, in each of the components, the values must be at least .40 (Pimpa, 2003). In addition, the analysis of communality values showed that Final Communality Estimated was 4.688. The supply of Pomelo is used in five components.

Component 1: The planning consists of 8 parts, which include: 1) prior to planting, the plantation area is planned to have an average annual temperature of 25-35 ° C. 2) prior to planting, the planting area is planned to have space with enough water to use throughout the year 3) prior to planting, there is a plan to provide the area for planting in a flat area and there is no flood problem.

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4) It is planned to monitor the temperature, moisture, light to suit the species and cultivars 5) planning do not let the weeds up, easy to navigate and operate 6) it is planned to use the statistics of the sale and return of Pomelo from the previous year to the production plan 7) planning on the cost of transportation 8) using the good quality water with the amount of minerals is not too high. This variable has an Eigenvalue of 7.494.

Component 2: The production consists of 6 parts, consisting of: 1) a fertilizer schedule spray pesticides and preventive medicine 2) a suitable number of laborers 3) the exact flowering date is determined 4) using technology in the production process 5) having more knowledge in decision making 6) having information on funding sources supporting the planting process. This variable has an Eigenvalue of 6.609.

Component 3: Procurement consists of 7 aspects, including: 1) in-depth relationship with the raw material supplier and long-term agreement 2) maintaining the win-win relationship 3) check quality and limitations of the product from the raw material suppliers 4) making a purchase decision based on quality and price 7) using the technology in transportation process. This variable has an Eigenvalue of 6.336.

Component 4: Transport and Return consists of 8 parts consisting of 1) two-way communication participate in problem solving and develop new technologies together 2) the raw material suppliers have been verified and confirmed the quality of the products 3) there is a common agreement to improve the quality continuously by cooperating with raw materials for process improvement 4) having futures contracts 5) quality of Pomelo remains the same during transportation 6) the transportation is convenient and fast 7) transportation costs are reasonable 8) having small amount of wrong ordering. This variable has an Eigenvalue of 5.445.

Component 5: The development and construction of the network consists of 5 aspects: 1) there is a plan to find out the direction of Pomelo development in the future 2) having the plan in seeking more knowledge 3) having the plan to find channels of distribution 4) having the criteria in choosing the supplier 5) having an attempt to create a network of manufacturing flexibility. This variable has an Eigenvalue of 5.181

Qualitative Research

Based on interviews with key informants, the findings are as follows.

1. The supply chain management model of Pomelo according to the size of the farmer base on the participation of the community to contribute the idea in problem solving and resource mobilization. It is an important way to make business successful and sustainable.

2. The pattern of Pomelo supply chain management is a system that will affect the success of self-managed management divided into various aspects: production planning, purchasing, shipping, return shipping. There is a systematic relationship in each side based on the importance of each task. This Pomelo supply chain management model can be developed according to the circumstances of the external environment business competition. Implementing the supply chain management model of Pomelo with the use of information technology in the process; details are as follows

2.1 Production planning; farmers must know that, what is the amount of debt and equity? This is one of the factors that must be taken into account in investment decisions and management. The important for quality grape production is need to speed up and maintain the freshness of the Pomelo transport. These are risks to the quality and price of Pomelo to keep up with the current competitive environment. For farmers or exporters, the supply chain management tools should be managed to be more effective in terms of reducing operational procedures.

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2.2 Procurement in assessing the performance of exporters, the quality of Pomelo ordering costs and speed of delivery. That is the relationship between the organization and the gardeners, experience and teamwork.

2.3 Transportation in the field of transport for rights assessment. The operation of the exporter is the quality of the Pomelo during transport, transportation speed and transportation costs. It was found to be prominent in the transport sector, in terms of performance and number of vehicles and route expertise. For transportation problems, it was found that the transport of Pomelo to the airport was the uncertainty of traffic conditions, delays in transportation, there are problems with the file, the cause of the full area, cargo late arrived at the airport and the excessive bookings.

2.4 The customer sends the Pomelo to the shipping agent. The shipping company will deal with the customer. When negotiating space for customers, the space will be provided to customers, prepare documents for the goods sent to destination and documents for export. Then check pre-shipment by checking the accuracy of the goods and documents.

2.5 The returns, it was found that both small and large exporters experienced inadequate space in time for quality problems of Pomelo. Only small exporters suffer from poor harvest. The Pomelo is not harvested export standards.

3. From the research found that the barriers to Pomelo supply chain management are as follows.

3.1 Pomelo storage factors awaiting transportation to the airport. When packing, there will be a waiting period for the carriage to the airport. At this time, there are problems with traffic conditions and planning problems for the airport. However, there are problems for exporters in terms of waiting time for trucks moving to airports with traffic problems. Based on this problem, the researcher proposed that each phase of the project should be planned with minimal time. The transportation of the car is planned to be effective. Deliberation is planned to be sent to the exporter or shipping agent. Geographic Information System (GIS) is used to help determine the optimal route for transportation.

3.2 Factors of export operation. Once the agent arrives at the airport, the Pomelo arrives at the warehouse and then proceeds to process the export. This section is waiting for submission of documents for Pomelo exports, which will take more or less depending on the number of service staff, order of export documents and the number of freight forwarders.

The results of the quantitative data, qualitative data by the in-depth interviews and summaries of data analysis and synthesis supply chain management of Pomelo in Nakhon Chaisri and the above document study found that the supply chain management model Pomelo. It should be used as the information to formulate and to benefit the farmers, Pomelo exporters in Nakhon Chaisri, Nakhon Pathom province, Thailand according to the supply chain management issues of Pomelo in defining the Pomelo supply chain management model agricultural products as shown in Figure 2.

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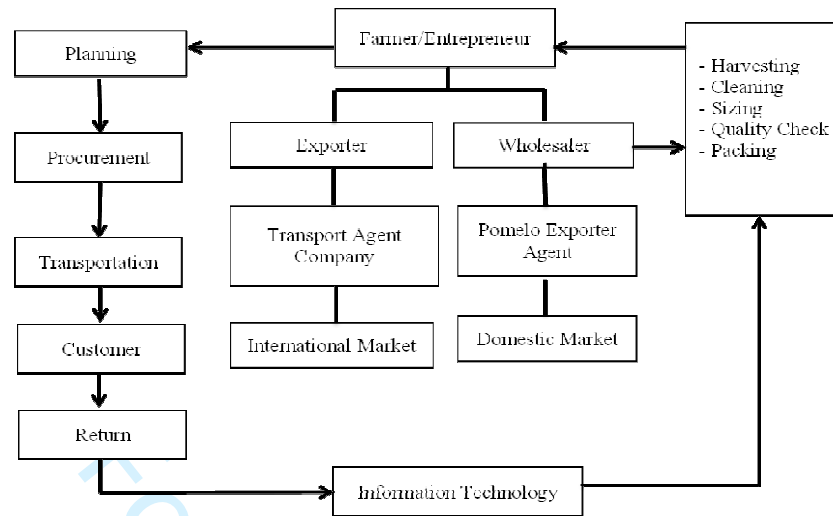
Picture 2 Supply chain management model of Pomelo Agricultural Products in Nakhon Chaisri, Nakhon Pathom province Thailand

DISCUSSION

Study on the supply chain management characteristics of Pomelo in Nakhon Chaisri, Nakhon Pathom province looks like supply chain management of pomelo. The results of the research showed that the creation of supply chain management model. It can be seen that most farmers have an idea that the supply chain management model of pomelo should be developed for the development of pomelo for export. This is consistent with the research by Jitimanee Ubonanee (2014). The research found that the problems found in the farmers sector. The middlemen and exporters have the problem of volatility in quantity, resulting in inadequate demand. This is because the small farmers have independent chains. All sectors are government. Clubs should be adapted and networked to increase capacity and competitiveness to support new markets in the future.

Meeting the needs of farmers, this can satisfy farmers. Farmers have an influence on the development of the supply chain model for farmer products according to Limmakorn Thipawan and Mek Horum Thumrong (2011), the study of the development of logistics system and supply chain management of pomelo in Samut Songkhram province. The results showed that pomelo growers had a good level of supply chain management. The development of logistics and supply chain systems was carried out by the development of the website of the Pomelo Quality Improvement Group to propagate and reduce the trading process, and to create trade opportunities for farmers in both domestic and foreign markets.

CONCLUSION

A study analysis of the supply chain management model of Pomelo in Nakhon Chaisri, Nakhon Pathom province was in the very high level. The research found that the supply chain management model of Pomelo agricultural products, according to the suit of Pomelo farmers. This is to promote the supply chain management model and the participation of community farmers, which will

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contribute to the idea. This is an important way for farmers in Nakhon Chaisri to be success and self-sustaining. And from the study of farmers' context, Pomelo orchard management of Pomelo supply chain management. The system model that will affect the success of supply chain management that can be manage manually, divided into various areas; production planning purchasing, shipping and return. In each of these areas, there is a systematic relationship based on the importance of each task. Once the supply chain management Pomelo model performed, that can be developed in accordance with the circumstances of the external environment of the competition. The supply chain management model is introduced by the use of information technology and the action on a continuous basis. The theoretical approach followed is to create a supply chain management model of Pomelo. To publish the supply chain management model of Pomelo products in Nakhon Chaisri farmers. With the knowledge, this will allow the farmers to use as a guideline for operations. Farmers were interested in changing their operations by introducing a supply chain management model that would enable farmers in Nakhon Chaisri successfully operate.

CONTRIBUTIONS

1. Farmers attend training courses or technical seminars for SME entrepreneurs on management by applying information technology to their operations in order to develop the knowledge to increase the value of products.

2. Purchasing Pomelo exporters focus on the quality of Pomelo in making a purchase decision based on quality and price, to develop the Pomelo production process, cost of purchase and the speed of delivery. That is the relationship between the organization and the gardeners, experience and teamwork.

3. Research system there is emphasis on Pomelo research as a suitable economic crop for climate in Thailand and importantly, there should be a research orchid that has a continuous research budget.

4. Human resource development has been studied in the field of skill development for the production of Pomelo supply chain using the study tools of foreign labor management in the terms of production and labor migration to the industry.

FUTURE RESEARCH DIRECTION

In the next research, both quantitative and qualitative data were collected and the results of this research could be answered clearly and effectively. But the data stored is a one-time data collection, Cross-sectional studies. The operation of the operator will change as well. Therefore, in the next study should consider long-term study. So when the time changes to different environments, the operation of the operator will change as well. Therefore, in the next study should consider long-term study, to study the changes or developments in the operation of the operator. Mixed method was used as a tool to collect data from agricultural operators and to improve the competitiveness and competitiveness of agri-business operators. This is a study of the ways and means of enhancing knowledge and skills. The policy is directed to agencies that represent the public and private sectors that implement the policy. The policy is to promote and assist farmers and related operators in enhancing competitiveness in the agricultural industry in each area.

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