SUPPLY CHAIN MANAGEMENT OF HYDROPONICS PRODUCTS CASE STUDY: CHOK ANAN FARM SAMUT SONGKHRAM PROVINCE

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ABSTRACT

The objectives of this research were 1) to study the problems and obstacles that arise in the supply chain of Hydoponics vegetable products of Chok Anan Farm, Mueang District, Samut Songkhram Province, 2) to explore the problem of supply chain management of hydoponics vegetable products. It considers the SCOR Model management process and creates a solution using the SCOR Model analyzer as a research data analyzer. The research area is Chok Anan Farm, Mueang District, Samut Songkhram Province. Owners of Chok Anan

Farm, Manager of Chok Anan Farm and those involved in the management of hydroponic vegetable supply chains. A total of 5 people use the selection method specifically for those who have experience, knowledge and expertise. In direct administration within Chok Anan Farm. The research tool is an interview model, focusing on

upstream to downstream supply chain management and problems encountered within the farm. Analyze primary data obtained from interviews. To test the accuracy of the content, interviews from entrepreneurs and people with relevant knowledge within the farm are conducted using theoretical principles. It is fully comparable to the supply chain management theory of Suharit Damrong (2007) and then analyzes and synthesizes the data to draw conclusions in the SCOR Model. The results of the research showed that: Objective

1 of the SCOR MODEL analysis of problems and obstacles in the supply chain of hydroponic vegetables found that there are seasonal limitations due to different growth in winter and summer, causing problems and price problems because the price of vegetables will depend on the market price, cannot be priced by itself and vegetables will be high in the last summer.

2 Chok Anan Farm has dealt with problems in the supply chain as follows: Seasonal constraints The farm solves the problem by storing it early to shorten the growth time for that vegetable to meet the standards.

Later, the problem of prices during the rainy season and winter will be low cost and vegetables are good in size, so the farm prefers to grow vegetables during the rainy and winter seasons. The farm solves the problem by having a reserve of vegetables, but not more than 5 - 10 days. Kilograms per day only. Baiyee-Mbi and Mazzini's research has applied supply chain concepts to manage U. S. food and fiber systems with management systems similar to those of conventional industries.

Knowledge from this research Nowadays, many businesses are engaged in agriculture, whether farming or gardening. Faced with difficulties or obstacles in the supply chain management process, not one process or the entire supply chain, causing damage to the system

within the farm or garden due to inefficient management.

Therefore, agribusiness operators can use SCOR Model analysts to help analyze various steps in the supply chain. And it will make the problems and obstacles that arise in each process clearly visible. and modify it to suit their agribusiness.

Keywords: Supply chain management, Hydroponics, Problem, SCOR Model

INTRODUCTION

Nowadays, people in Thailand are more interested in health. Especially in the area of consumption which is the main factor in living life. From the risks that we have to face every day that may affect the body Both directly and indirectly But it is popular among modern teenagers. The modern generation of teenagers often have rapidly changing ideas (Phubet Samutchak and Mansikarn Kanchanachitra, 2014). There has been a shift to consuming more vegetables for health. People are consuming more vegetables. To want to maintain health As a result, consumers are increasingly interested in consuming organic, healthy vegetables. And growing vegetables without chemicals comes in many forms, such as growing vegetables in organic agriculture. Growing vegetables in a greenhouse Growing vegetables without using soil, etc., because growing vegetables in hydroponics will save space for growing and will not be contaminated with various chemicals in the soil, resulting in clean vegetables as food (Medthai, 2020)

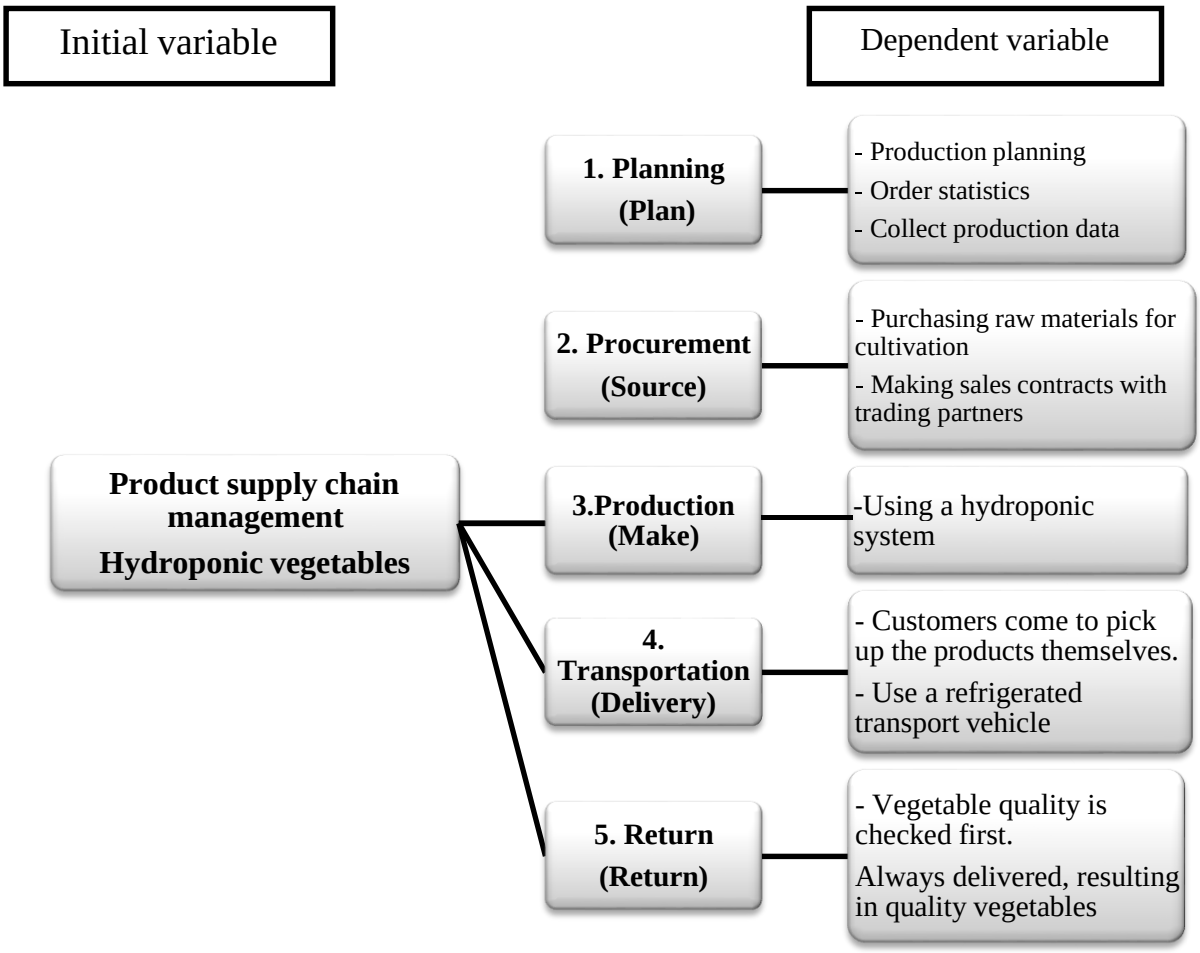
Chok Anan Hydroponics This is the farm that we chose to use as an example for our research. By growing plants without soil (Soilless Culture), which is done in two ways: Hydroponic cultivation (Hydroponics: Growing plants in water or in a nutrient solution) and Growing on Substrate (Substrate Culture: Growing plants on materials other than soil) Choke Anan Farm Seeds are purchased from within the country. And planted according to orders When the time for export arrives Vegetables will be delivered to factories that are exporters in approximately 3 countries: Germany, Switzerland and England, spreading the risk among 3 companies in terms of upstream logistics. There will be a refrigerated truck from the company coming to pick you up in front of the farm. Which will be collected and delivered on that day To keep vegetables fresh When they reach the factory, the vegetables will be kept in cold storage. Then follow the delivery process by plane. Wait about 1-2 days. All vegetable products will be delivered to Europe.

Therefore, the researcher is interested in studying the supply chain management of hydroponic vegetable products, a case study of Chok Anan Farm, Mueang District, Samut Songkhram Province. By adopting guidelines for supply chain management and logistics Come help solve problems and develop and manage commercial hydroponic vegetable growing. Which supply chain and logistics management It is a management process from upstream to downstream using the SCOR Model as an analyzer. To develop supply chain management to be more efficient and quality.

OBJECTIVES

1. To study problems and obstacles occurring in the supply chain of hydroponic vegetable products. Chok Anan Farm, Mueang District, Samut Songkhram Province
2. To explore the problem of supply chain management of hydroponic vegetable products. By considering the SCOR Model management process and creating solutions.

RESEARCH CONCEPTUAL FRAMEWORK



LITERATURE REVIEW

1. Concepts about supply chain management (Supply Chain Management: SCM)

In the study of supply chain management concepts It has been widely studied. There are various definitions of supply chain management. For example, The International Supply Chain Vocational Training Institute, SCM (2013), has defined supply chain management as the collection, planning, and management of all activities related to sourcing, purchasing, processing, and management activities. all Importantly, supply chain management also includes coordination and working together with various partners in the supply chain, who will be the suppliers of raw materials, service intermediaries, logistics providers, and customers. The important point is that supply chain management will Integrate both Supply and demand management This includes both inside and outside the company.

2. Concepts about the reference model of supply chain operations (Supply Chain Reference Model: SCOR)

From researching related documents, the research team found that the supply chain operations reference model (SCOR Model) is a concept that helps in developing supply chain management operations. It was developed for use in characterizing and visualizing all supply chain activities. To create satisfaction for
customers by setting various work processes to the same standard and having a structure showing the relationships between the processes. In the supply chain process, there are 5 important processes, which are planning, purchasing, procuring and transporting, producing,

and delivering products to customers. and product returns So that all 5 processes are consistent and effective in working, helping to solve the problem of lack of standards and developing management to improve the supply chain to be more efficient (Visankitti, 2021) (Nattaphon Buaplisee et al. , 2018)

3. Concepts about supply chain management and logistics

Supply chain management has a broader meaning than logistics. In fact, logistics is one of the five important elements. of supply chain management which consists of connections between related parties using information Production and logistics management combined with business process integration for maximum efficiency. Supply chain management is therefore an activity throughout the supply chain. This is to ensure that supply per product is matched with demand at every stage of the chain.

4. Concepts about agricultural product supply chain management

Agricultural supply chain management focuses on product flow. Information and capital flows and risks Factors affecting the flow of goods It is divided into market structure and competition. Distribution channels Production process Product characteristics and logistics The information flow section covers production processes and technology as well. For the flow of capital, it includes risk management and risk sharing. (Thailand Development Research Institute, 2010)

METHODS OF CONDUCTING RESEARCH

In conducting this research study, it is qualitative research. By studying information on supply chain management of hydroponic vegetable products. Case study of Chok Anan Farm Explore the problem using the Supply Chain Reference Model (SCOR) to know how to operate. And problems and obstacles that occur in each step. Then the problem conditions of each step will be analyzed. To propose ways to improve the supply chain

1. Research informant

The informants in this research include: Owner of Chok Anan Farm Chok Anan Farm Manager and those involved in hydroponic supply chain management Total number: 5 people, Mueang District, Samut Songkhram Province

2. Tools used to collect data

The tools used to collect this data are In-depth interview It consists of interview questions based on the SCOR Model analyzer.

3. Data Collection

Study from articles, documents, books, and various research studies. That involves using the concept of supply chain management to know the meaning and principles of this concept. And used in-depth interviews. The researcher divided the data collection content into the following sections:

3.1 Data collection using in-depth interviews (In-depth Interview)

Part 1 Information about the interviewee

Part 2: Questions used in the interview regarding supply chain management.

The researcher interviewed key informants with questions about hydroponic supply chain management. And use the SCOR Model analyzer

4. Data analysis

The researcher used data analysis to create conclusions from the data obtained from the interviews. In testing the accuracy of the content is Interviews with entrepreneurs and people with relevant knowledge within the farm then create concepts using theoretical principles. There is a comparison with the supply chain management theory of Wittaya Suharitdamrong (2007) from the process of arranging the supply chain, upstream, midstream, downstream, and analyzing and synthesizing data to find conclusions in the SCOR Model as follows.

4.1 Problems and obstacles encountered in supply chain management of hydroponic vegetable products Chok Anan Farm

4.1.1 Supply chain management – upstream (procurement planning and management) Problems encountered: In the early stages of growing vegetables There is not enough information on growing each type in many aspects, so much so that we have to keep trying to do it, sometimes according to customer needs. Including the price mechanism for vegetables in the market that cannot set the price itself. This causes orders from customers to decrease in some periods. And problems related to the global situation such as COVID-19 causing business to be disrupted.

4.1.2 Supply chain management - midstream (production process)

Problems encountered: In some periods there may be a lack of labor for harvesting. And from time to time, there may be insect problems that are unknown or have never been seen before in greenhouses where vegetables are grown. Until causing damage And the main problem is Growing vegetables during different seasons As a result, the vegetables that customers want must be harvested earlier or later than scheduled.

4.1.3 Supply chain management – downstream (delivery of products to customers) Problems encountered: The farm only produces products according to orders and cannot increase the amount of production. Because the farm will only grow according to orders.

RESEARCH RESULTS

From this research study The results of the data analysis were obtained. “ Supply chain management of hydroponic vegetable products, a case study of Chok Anan Farm, Mueang District, Samut Songkhram Province” in order to meet the objectives of the research. From this study, the researcher has taken data from interviews. Participatory observation and data can be divided as follows.

1. Supply chain management of hydroponic vegetable products Using the SCOR model, which is built on the basis of 5 management processes:

1.1 Planning (Plan)

This section refers to all operations that need to be planned in order to operate to the extent that they can be covered. It is also possible to forecast orders in advance. In order to produce products that meet customer needs. Communication to continue managing the supply chain in other steps In addition, there is always product development to respond to consumer needs. It can be seen that in the planning process according to the farm's SCOR model, the farm can control the entire chain of hydroponic vegetable production. From production to delivery to exporting companies By being able to guarantee product quality that the products were harvested and deliver it to the exporting company efficiently And the farm will record information in every process. In order to be able to notice problems and solve them directly. and can make all processes interconnected and increase work efficiency. Production plans have been allocated to meet consumer demand. By planning and executing production according to that season, emphasizing the cultivation of vegetables in rotation and a variety of types to prevent the outbreak of diseases and insect pests (Patcharin Supapan and Benjapan Ekasingh, (2017)

1.2 Procurement (Source)

From the case study of Chok Anan Farm, Mueang District, Samut Songkhram Province in the procurement process It will be divided into 2 categories: procurement of raw materials for advance production and production according to order. It also includes evaluating and managing a database of raw material inputs into the system and a database of shippers. Managing the basic elements of raw material procurement includes the quality of raw material

procurement, raw material procurement contracts, and payment for purchased raw materials. “ The farm has an annual sales contract. Most of the customers are customers who have been trading for a long time. It makes the farm have trust and can place orders orally” (Khun Wonganan Sukcharoenkana) The farm has agreed to an annual sales contract. The farm will always keep order statistics to predict orders. Moreover, the farm itself purchases seeds directly from the parent company. and because it is purchased directly through the company Makes costs cheaper as well. Moreover, the farm uses biological fertilizer instead of chemicals that may be left on the vegetables. For the safety of consumers And using biological fertilizers can also save costs more than using chemical fertilizers (Patcharin Suphapan and Benjaphan Ekasingh, 2017).

1.3 Production (Make)

In the production part It is a transformation of properties, shapes, and operations. To add value to raw materials All processes in production begin with the organization. Basic organizational management includes the quality of production. production equipment and determination of production capacity during that period From the case study of Chok Anan Farm, Mueang District, Samut Songkhram Province Data is collected on every step of the planting process. This information is useful in analyzing the true cause of the problem and enabling accurate problem solving. And in this production, the farm uses secondary labor because the hydroponic vegetable growing system is a system that is controlled by a technological system. Therefore, the farm reduces the cost of employment. In addition, the farm must plan production to be up to standard because the products must be shipped to customers abroad. For the application of production to meet the GAP standards for food crops of the National Bureau of Agricultural Food Standards, vegetables must receive the least amount of chemicals. Producing safe products must focus on controlling and preventing problems in the production process as much as possible. In the production process, there must be a trial of product production. Produce products to meet the quantity and quality according to customer needs. Make delivery within the specified time. In the production process We must have control and management in every step or every section, whether it be data management, management, material preparation. Managing the production process until taking care of product delivery in order to achieve customer satisfaction (Rujapa Nanthapodet, Sasikarn Puttala and Sirorat Patanapairoj, 2006)

1.4 Transportation (Delivery)

Product delivery involves a process of contacting the customer before production. and the process of delivering finished products to customers Shipping is the part handled in response to an order from a customer. The delivery of the product will include: Preparation of bidding documents Issuing bills It also manages warehouses. that involves packing, collecting products, and managing basic elements of delivery, such as managing the quality of delivery From the case study of Chok Anan Farm, Mueang District, Samut Songkhram Province The farm does not ship products to customers but only harvests according to customer orders. When the harvest is finished, the exporting company will send a refrigerated van to pick up the vegetables that have already been prepared. The products will be delivered to the customer within no more than 3 days to ensure the freshness of the products at all times. In addition, the farm grows salad vegetables such as green oak, green cosmos, etc., and sends them to small buyers within the province. There will be the same process. Take orders Produce products according to orders and store

Guidelines for solving problems and obstacles that occur within the supply chain: SCOR Model

SUMMARY OF RESEARCH FINDINGS AND DISCUSSION OF RESULTS

The researcher conducted a study and research design using primary data obtained from interviews and field observation at Chok Anan Farm, Mueang District, Samut Songkhram Province, with the issues that can be identified as follows. From the study, the researcher used the SCOR Model as a tool for analysis. Relationship of
supply chain management processes and present a model for managing the supply chain of products Hydroponic vegetables from Chok Anan Farm, Mueang District, Samut Songkhram Province To study problems and obstacles that occur in Hydroponic vegetable supply chain process

SUGGESTIONS FOR RESEARCH

Suggestions for applying research results

Currently, in Thailand, there are a large number of businesses related to hydroponic vegetable products spread throughout the country. There are also educational centers for new generations of farmers who are interested in this business to come and study. However, doing a vegetable business Hydroponics still requires a
lot of knowledge and experience. Therefore, those interested in the hydroponic vegetable business should study the supply chain management within the farm using the SCOR MODEL analyzer, which will enable them to know the processes within the farm. From upstream to downstream, we can solve problems and develop commercial hydroponic vegetable growing management very well to improve supply chain management for greater efficiency and quality.

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