Webology (ISSN: 1735-188X) Volume
19, Number 2, 2022

Sustainability Model Of Thai Frozen Food Industry Supply Chain

Somboon Treepornjaroen [1] , Sudawan Somjai[2] , Sarge Vasuvanich [3]

[1]Student of Doctor of Philosophy Program in Development Management,
Suan Sunandha Rajabhat University, S62584917036@ssru.ac.th [1]

[2]President of Doctor of Philosophy Program in Development Management,
Suan Sunandha Rajabhat University, sudawan.so@ssru.ac.th[2]

[3]Lecturer of Doctor of Philosophy Program in Development Management,
Suan Sunandha Rajabhat University, saroge.va@ssru.ac.th[3]

ABSTRACT

The frozen seafood industry is important to the economy. Although Thailand has the advantage of workers' wages, there are plentiful raw materials, but the price competitiveness and resource advantage are unsustainable. In addition, the COVID-19 has caused a delay in product ordering and delivery. The objectives of this research were to: 1) study the level of sustainability of the frozen seafood industry supply chain in Thailand; 2) study factors influencing the sustainability of the frozen seafood industry supply chain; and 3) propose a sustainability model of the Thai frozen seafood industry supply chain. This research employed a mixed research methodology, combining quantitative research and qualitative research methods. In quantitative research methods, stratified random sampling was employed in this study. The sample consisted of at least 340 people such as executives, officers, and employees who work in or are related to the frozen seafood industry in Samut Sakhon province. The sample size was determined based on the criterion of 20 times the observed variables, with 17 variables. A structural equation model was used to analyze the data after the questionnaires were distributed. In the qualitative research component, semi-structured interviews were conducted with 15 key informants, including executives, government officials, entrepreneurs, and consumers. The research results found that: 1) the sustainability of the frozen seafood industry supply chain in Thailand was rated at a high importance level; 2) the variables influencing the frozen seafood industry supply chain's sustainability were traceability, green concept, training, and government support, respectively; and 3) a sustainability model of the Thai frozen seafood industry supply chain revealed that the supply chain system was the key and strategic to achieving sustainable business success. Within the organization, management should be developed in tandem with environmental management, connecting upstream, midstream, and downstream processes and cooperating within the organization and with business partners to

address customer needs in a sustainable way. The findings of the research are useful to entrepreneurs in the frozen seafood industry, as they may be utilized as a guideline to improve supply chain management efficiency.

Keyword: Sustainability Mode / Supply Chain / Industry / Frozen seafood

THE BACKGROUND AND IMPORTANCE OF THE PROBLEM

Thailand's food industry is one of the industries that has a significant impact on the country's economy. It is also a fundamental industry to add to products such as agriculture. Thailand's food industry has progressed to export to more than 200 countries, with an average number of more than 800 billion Baht per year (Office of Industrial Economics, 2020).

Refrigerated, frozen, canned, processed foods, resulting in data on seafood exports. In the eight months, from January to August, there were $2.494 million. Overall, the freezing seafood export situation in 2016 has expanded well despite the country's economic stagnation, especially the export of frozen fresh shrimp. The main frozen food export market in 2016 included the U.S. because it accounted for more than 50 percent of exports, second in Japan, Australia and other countries. According to data, in the first six months of 2016, Thailand exported 82,442 tons of frozen shrimp worth 27,088 million Baht (Information Center, Ministry of Commerce, 2017).

Frozen Seafood Industry The main thing is supply chain management (SCM), starting from the management and management and flow of goods throughout the process to maximize efficiency and value-added. By using internal and external capabilities to create a coordinated supply chain. All processing means for storing raw materials, planning, production, quality control, inventory, and shipping. From supplier to customer, supply chain networks now face challenges such as high demand variability, short product life in today's competitive economy. Although Thailand has the advantage of having a low wage and expertise in manufacturing, Thailand has the advantage of having a low wage and expertise in manufacturing (Wisara Hunthani, 2012).

As well as having abundant raw materials, price competition and the use of resource advantages are not sustainable. The world food market is also fiercely competitive, there are always new competitors, there are new safety standards, regulations and consumers that constantly change consumption habits. Serious development and government support for both regulatory information, marketing, studying and developing products for value-added processing (Wang, F., Lai, X. F., and Shi, N. , 2011) As well as supporting trade through the process of trade negotiations and assistance to provide entrepreneurs with access to funding sources, it is a matter of priority and continued action (Chaiwat Sowcharoensuk, 2562). But there is still a major problem: the uncertainty of raw materials, labor shortage, global economic volatility, rules and discouraged measures, tighter trade and the covid-19 pandemic have led to delays in orders and delayed delivery of goods. As a result of the condition of such problems, Therefore, investigators are interested in studying the Sustainability Model of Thai Frozen Food Industry Supply Chain.

RESEARCH OBJECTIVES

1. To study the priority of factors influencing the sustainability of Thailand’s frozen seafood industry supply chain.

2. To study government support. Traceability Training Green concepts that influence the sustainability of Thailand's frozen seafood industry supply chain.

3. To propose the sustainability model of Thailand's frozen seafood industry supply chain.

RESEARCH METHODS

This is a combination of quantitative and qualitative research.

Quantitative Research: The samples are executives, officers, employees who work and are related to the frozen seafood industry in Samuttansakorn Province. 340 stratified random sampling.

A tool is an 85-level estimation query, examining the quality of the instrument by determining the IOC value, which found that the entire IOC value is .95 and the entire sentiment value of .954 analyzed the data by using descriptive statistics and analyzing structural equation models.

Qualitative research: Key informants' group is 1) executives, government officials, 5 persons 2) Operator Officials involved in the frozen seafood industry, 5 persons and 3) Consumers, 5 persons, total 15. The tool is a semi-structured interview. 6 open-ended questions: The IOC value of the question is between 0.80-1.00.

SUMMARY OF FINDINGS

Research on the Sustainability Model of Thai Frozen Food Industry Supply Chain summarized the findings, according to the research objectives as follows:

The objectives of Research No. 1: study the priority of factors influencing the sustainability of Thailand's frozen seafood industry supply chain.

Table 1 Factor Priority

Latent Variable Totals	Amount	Mean	St. Dev.	Priority	Order
Government support	340	3.87	0.48	high	3
Training	340	3.88	0.50	high	2
Green Concept	340	3.79	0.44	high	4
Traceability	340	3.74	0.54	high	5
Sustainability of the Frozen Seafood Industry Supply Chain	340	3.91	0.52	high	1

Comparative analysis and sequencing of all phantom variables

Table 1 can be sorted as follows: Sustainability of the Frozen Seafood Industry Supply Chain It averaged 3.91 for the first time, second only to training, the third is government support, with an average of 3.87, the fourth is the green concept, it has an average of 3.79, and the fourth is traceability. It has an average of 3.74.

The objectives of research no. 2: study the causal factors of government support, traceability, training green concept and sustainability of the frozen seafood industry supply chain.

Shows the relationship and influence of data analysis together to determine the harmony of the model with the empirical data after the final adjustment of the model, effective as shown in Figure 1.

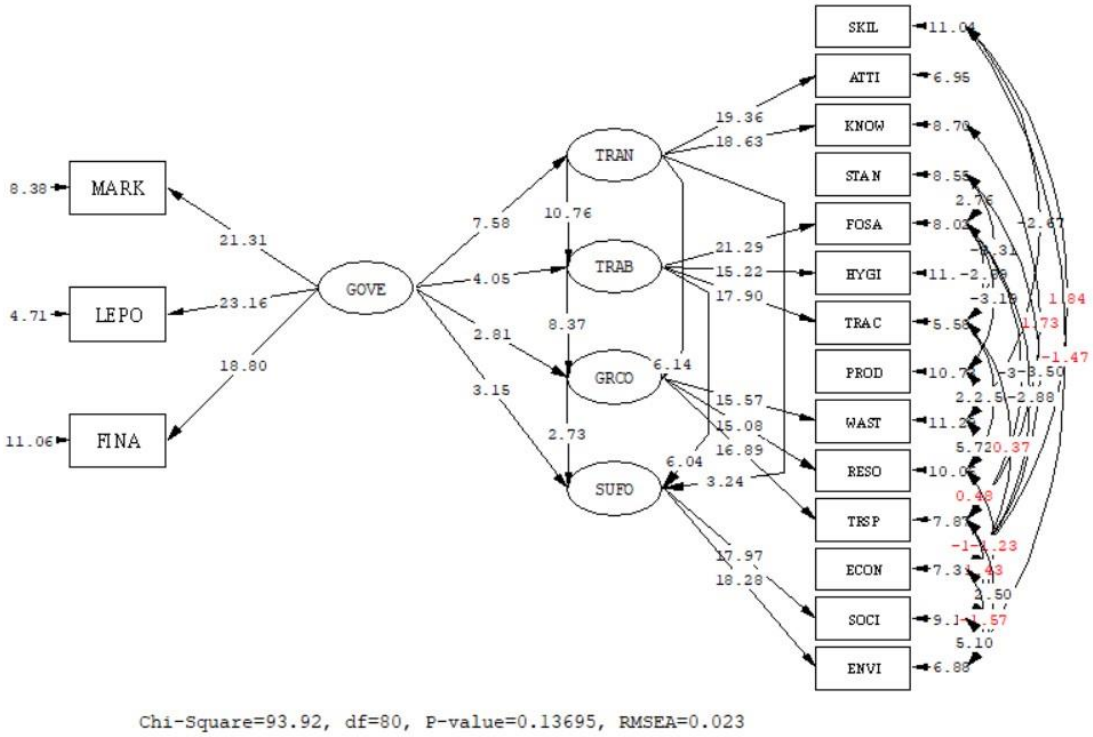

Figure 1 Models and Empirical Data

Test results, assumptions according to Table 2

Table 2 Analysis of integrated relationships, direct relationships, and indirect relationships of alternative models

Dependent Variable	Relation ship	Independent Variables				
		GOVE	TRAN	TRAB	GRCO	SUFO
TRAN	DE	0.44**	N/A	N/A	N/A	N/A
	IE	N/A	N/A	N/A	N/A	N/A
	TE	0.44**	N/A	N/A	N/A	N/A
TRAB	DE	0.19**	0.63**	N/A	N/A	N/A
	IE	0.28**	N/A	N/A	N/A	N/A
	TE	0.47**	0.63**	N/A	N/A	N/A
GRCO	DE	0.12**	0.39**	0.62**	N/A	N/A
	IE	0.47**	0.39**	N/A	N/A	N/A
	TE	0.59**	0.78**	0.62**	N/A	N/A
SUFO	DE	0.13**	0.23**	0.73**	0.34**	N/A
	IE	0.36**	0.63**	0.21**	N/A	N/A
	TE	0.49**	0.86**	0.94**	0.34**	N/A

Chi-Square= 93.92, DF=80, p-value = 0.137, GFI=0.97, AGFI=0.94, RMR=0.017,

RMSEA=0.023, CFI=1.00, CN=379.36

Note: * Refers to statistical significance of 0.05 ([t] >1.96)

** Refers to statistical significance of 0.01 ([t] >2.56)

From Table 2, it is possible to describe the relationship path: Government support (GOVE) has the highest direct correlation with training (TRAN) as 0.44. Second only to traceability (TRAB), the sustainability of the frozen seafood industry supply chain (SUFO) and green concept (GRCO) were 0.19, 0.13 and 0.12 respectively. It indirectly affects green concepts (GRCO), supply chain sustainability, frozen seafood industry (SUFO) and traceability (TRAB) of 0.47, 0.36 and 0.28, respectively. The training (TRAN) has the highest direct correlation with traceability (TRAB) of 0.63, second only to the green concept (GRCO) and the sustainability of the frozen seafood industry supply chain (SUFO) of 0.39 and 0.23 respectively. It indirectly affects the sustainability of the frozen seafood industry supply chain (SUFO) and green concepts (GRCO) of 0.63 and 0.39, respectively. Traceability
(TRAB) has the most direct correlation with the sustainability of the frozen seafood industry (SUFO) supply chain as 0.73, second only to the green concept (GRCO) of 0.62 and indirectly affect the sustainability of the frozen seafood industry supply chain (SUFO) of 0.21. Green concepts (GRCO) were found to be directly related to sustainability of Frozen Seafood Industry Supply Chain (SUFO) equals 0.34.

Table 3 Hypothesis Test Results

Research Hypothesis	Path Coefficient	t statistics	Result
Assumption 1 Government Support (GOVE) Training (TRAN) Traceability (TRAB) and Green Concept (GRCO) affect the sustainability of the frozen seafood industry (SUFO) supply chain.			
1.1 Government support directly affects the sustainability of the frozen seafood industry supply chain (GOVE --> SUFO)	0.13**	3.15	support
1.2 Training direct effects on the sustainability of the frozen seafood industry supply chain (TRAN --> SUFO)	0.23**	3.24	support
1.3 Traceability direct effects on the sustainability of the frozen seafood industry supply chain (TRAB --> SUFO)	0.73**	6.04	support
1.4 Green concepts directly affect the sustainability of the frozen seafood industry supply chain (GRCO --> SUFO)	0.24**	2.73	support

Research Hypothesis	Path Coefficient	t statistics	Result
Assumption 2 Government support (GOVE), training (TRAN) and traceability (TRAB) affect green ideas (GRCO)			
2.1 Government support directly affects green ideas (GOVE --> GRCO)	0.12**	2.81	support
2.2 Training direct effects on green concepts (TRAN --> GRCO)	0.39**	6.14	support
2.3 Traceability directly effects green concepts (TRAB --> GRCO)	0.62**	8.37	support
Assumption 3 Government Support (GOVE) and Training (TRAN) affects traceability (TRAB)			
3.1 Government support directly affects traceability (GOVE --> TRAB)	0.19**	4.05	support
3.2 training direct effects on traceability (TRAN --> TRAB)	0.63**	10.76	support
Assumption 4 Government Support (GOVE) effects training (TRAN)			
4.1 Government support directly effects training (GOVE --> TRAN)	0.44**	7.58	support

Note: ** Refers to p value □0.01

* Refers to p value □0.05

From Table 3, hypothesis test results can be summarized as follows:

Assumptions 1: Government support (GOVE) training (TRAN) traceability (TRAB) and green ideas (GRCO) affect the sustainability of the frozen seafood industry (SUFO) supply chain found that government support directly affects training. The path coefficient is 0.13, the t statistics is 3.15, which supports a statistically significant assumption of 0.01. This can be interpreted as the variables studied correlated in the same direction, that is, as government support increases, resulting in greater sustainability of the frozen seafood industry supply chain.

The training directly affects the sustainability of the frozen seafood industry supply chain, with a route coefficient of 0.23, t statistics of 3.24, which supports a statistically significant assumption of 0.01. This can be interpreted as the variables studied correlated in the same direction. That's as more training results in the sustainability of the frozen seafood industry supply chain.

Traceability has a direct effect on the sustainability of the frozen seafood industry supply chain with a route coefficient of 0.73, t statistics of 6.04, which supports statistically significant assumptions of 0.01. This can be interpreted as the variables studied correlated in the same direction. That's as more traceability results in the sustainability of the frozen seafood industry supply chain.

The green concept has a direct impact on the sustainability of the frozen seafood industry supply chain, with a route coefficient of 0.24, t statistics of 2.73, which supports statistically significant assumptions of 0.01. This can be interpreted as the variables studied correlated in the same direction, that is, as green concepts increase, resulting in greater sustainability of the frozen seafood industry supply chain.

Assumptions 2: government support (GOVE), training (TRAN) and traceability (TRAB), affects green ideas (GRCO), according to the hypothesis test results. The path coefficient is 0.12, the t statistic is 2.81, which supports a statistically significant assumption of 0.01, which can be interpreted as correlated with the variables in the same direction, that is, as government support increases, resulting in more green ideas.

Training directly affects green concepts with a path coefficient of 0.39, a t statistic of 6.14, which supports statistically significant assumptions of 0.01. This can be interpreted as that the variables studied correlate in the same direction, that is, as more training results in more green ideas.

Traceability directly affects the green concept with a path coefficient of 0.62, a t statistic of 8.37, which supports a statistically significant assumption of 0.01. This can be interpreted as that the variables studied correlate in the same direction, that is, as more traceability increases, resulting in more green ideas.

Assumptions 3: Government support (GOVE) and training (TRAN) affect traceability (TRAB) from hypothesis test results, it found:

Government support directly results in traceability with a route coefficient of 0.19, t statistics of 4.05, which supports a statistically significant assumption of 0.01. This can be interpreted as the variables studied correlated in the same direction, that is, as government support increases, resulting in more traceability.

The training directly results in traceability with a path coefficient of 0.63, t statistics of 10.76, which supports a statistically significant assumption of 0.01. This can be interpreted as whether the variables studied correlate in the same direction, that is, as training increases, resulting in more traceability.

Assumptions 4: Government support (GOVE), affects training (TRAN) based on hypothesis test results, have shown that government support directly affects training with a path coefficient of 0.44, t statistics of 7.58, which supports statistically significant assumptions of 0.01. This can be interpreted as whether the variables studied correlate in the same direction, that is, as government support increases, resulting in increased training.

Objectives of Research No. 3 Sustainability Model of Thailand's Frozen Seafood Industry

Supply Chain It found that the frozen seafood industry is clearly important to Thailand's economy in terms of production value, employment and exports, as well as high links to both agriculture and other industries. Supply chain systems are key and strategic to achieve sustainable and successful business outcomes in parallel with environmental operations. Sustainable management and environment within the organization should be improved, linking related processes from upstream, midstream and downstream, create inhouse partnerships and partner companies to meet the needs of customers to be sustainable. As shown in Figure 2.

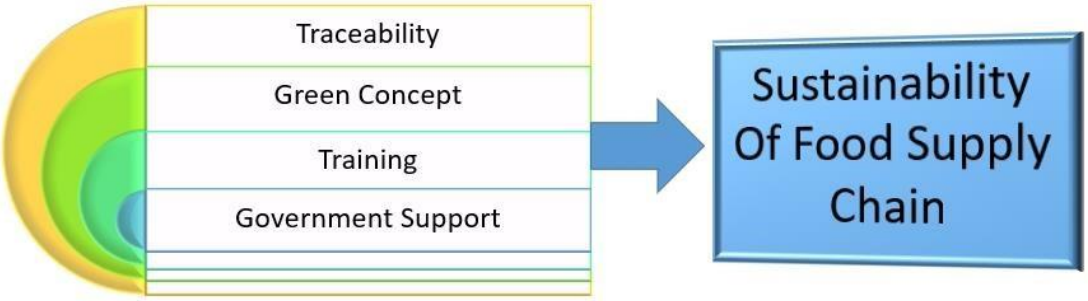

Figure 2 Sustainability Model of Thai Frozen Food Industry Supply Chain

The findings are summarized as follows: Supply chain systems are very important processes to conduct business operations and require continuous links and transmissions to each other, including information, raw materials and goods, and financially. Throughout the process, it includes the process of receiving orders, Procurement and procurement process, raw material, Production planning process, Route, Inspection and assurance process, Quality Inventory Collection Process, Planning and transportation process, Receiving process, Customer feedback and complaints, etc. This process has several steps. There are many stakeholders working. There are several channels to communicate and coordinate. There is a data system that does not. Interconnect An error occurred using non-current data. As a result, a wrong decision was made and there are unnecessary cost effects, affecting delays in raw material orders or delayed delivery, it can be a waste of business benefits. Supply chain management is the first step in developing a good process, the issues discussed at this level include the choice of size and purpose of the business model (supply and demand size), establishing a network of trusted suppliers, carriers, and shipping carriers (networking), long-term improvements and innovations to meet customer needs (innovation). Inventory and product management throughout the lifecycle (life cycle management), programs and its systems to make this process efficient (its infrastructure), these are processes in which decisions and planning are made to keep the supply chain running.

DISCUSSION

Government support, Training, Traceability, Green ideas, influences the sustainability of Thailand's frozen seafood industry supply chain, details are as follows:

1. Government support includes: marketing , Laws and policies, and monetary influence directly on the sustainability of Thailand's frozen seafood industry supply chain as Thailand 4.0 is committed to making Thailand a "value-based economy". The main base for thinking is to switch from commodities to innovations, it went from industrial drive to technology-driven country, creativity, innovation and shift from manufacturing to more service. One of the focused groups is the food sector because Thailand has the potential and strength of food, which will result in the development of the business and be able to compete in the market. In line with Teerayut Kiatpiriyawong (2018) The frozen food industry is classified as a type of agricultural industry. Therefore, how much the state plays in the marketing of agricultural products depends on how effective the country is. Manufacturer, consumer, and whether people in marketing are

treated fairly or not. If the market has acted effectively, then the state does not need to be involved much, on the contrary, if the market is inefficient. Manufacturers and consumers are very exploited, the state also needs to get involved a lot. In line with Mahul & Stutley, (2010), Asim, Li, Makhdoom, Zafar (2019) discusses the established guidelines used as a framework for determining and operating the work of the agency. There are three important characteristics: first of all, Policies are broadly defined text, generally implied, Secondly, Policies are directions and frameworks for management and operations in the organization to serve as a destination or goal of the organization's operations, as well as guide the decisions of stakeholders in the matter and lastly, the policy is not a method of operation, but a framework that is used as a guideline to define the guidelines for achieving the intended goal as the next policy. The policy has three elements: the necessary part of the policy. The policy text and the part that implements the policy. And in line with Akhmetshin & Shafigullina (2015), it guides the practice or judgment in order to achieve any objectives by providing a framework for executives and personnel in the organization to guide the decision to successfully implement the policy.

2. Training consists of skills, attitudes and knowledge, direct influence on the sustainability of Thailand's frozen seafood industry supply chain, since in measuring the competitiveness of the organization, one of the organization's potentials is manpower or human resources. Because the organization can succeed depends on the ability of its members within the organization. In accordance with Deming, (2017), people are able to continuously improve and apply that knowledge throughout. It also increases capacity, efficiency and quality, this can make changes to the organization. In accordance with Tugce et al, 2020, inhouse executives must focus on developing personnel to make people develop themselves continuously. And in accordance with the training, the above-mentioned changes must be made in the person, may be separated in attitude or skills or understanding as necessary. Training is an important guide to keeping employee’s quality in time for change because training helps trainees gain new knowledge, increase their skills and have a positive attitude. And it is consistent with (Yoann, Jérémie, Virginie, Ingrid, Samuel, & Nathalie, 2020), whose training is a combination of not new information and experience, creating behavioral modification approaches that make the most of the organization and giving employees the opportunity to change their development, who needs to be trained, all employees of the organization need to be trained because the organization is constantly changing, both in technology, new knowledge and changing people. And in line with Bangor Benjatikul, 2015 Personnel management to change operational behavior must start with changing attitudes, developing a positive attitude will help strengthen the growth of personnel and organizations both now and in the future. Good training must be able to make a person change their behavior for the better. Benefiting individuals, whether in the field of knowledge development, ideas, decision-making analysis to create a good internal feature of the work done by training often takes a short period of time so that participants can apply their knowledge to their operations immediately.

3. Traceability consists of industry standards, food safety, hygiene and monitoring systems directly influence the sustainability of Thailand's frozen seafood industry supply chain. Due to traceability in the food industry, due to the government's policy of promoting food safety, the government has a policy to promote food safety. In line with Fahimnia, Sarkis & Davarzani, (2015), coupled with the exasperation of many countries around the world that have prioritized and increased consumer protection measures, especially imports of obtaining food

products. Recognizing the importance of the traceability system even more, one important thing that is pushed in the traceability system can actually be possible. In practice, it is to rely on information technology systems, whether it is the introduction of barcode technology or RFID technology together with the relevant software system, to help with the operational level. In line with Gunasekaran, Subramanian & Rahman, (2015), the traceability system in the shrimp industry is focused on upstream, midstream and downstream industries. And in line with Bosona & Gebresenbet (2013), it has introduced a traceability system, it is necessary in the structure of the business to increase the reliability of goods and also facilitate the management of supply chains and production process efficiency. Despite the potential of traceability systems, which have many benefits, most industries still don't feel that data traceability systems don't yet have sufficient impulses to grow their business, this makes it only a legal limit. The practice of traceability systems is a redundant supply chain, and production also has several issues, such as lack of cost efficiency, incompatible production system and personnel knowledge. In line with Resende-Filho & Hurley (2017), it presents the definition of data rollback by forecasting probabilities based on principles from the destination that initiates data rollback and tracking. This leads to the shipper leading to food safety, the beginning of food safety from defects in raw materials available from the source of production. The vegetable reversal system does not yet have clear signs for food safety. Developing a safe vegetable system is a cost-raising process that has been created as a Modeling Framework. The analysis highlighted problems that began with objects and distributions to downstream in the analysis, hypothesizing the defects of goods that occur within control, such as from chemicals, damaged goods or pests. Traceability systems are used to make food more secure, and data rollback systems accumulate information about goods and processes as they move in the supply chain and cannot predict problems on their own.

4. Green concepts consisting of manufacturing processes, waste management, resource management and transportation have a direct influence on the sustainability of Thailand's frozen seafood industry supply chain. Because the industrial sector is viewed negatively by society. The community and the surrounding people are the source of pollution and suffering. The adaptation of the industry to have an environmentally friendly manufacturing process is the only way for the establishment to have a sustainable approach to industrial operations with communities and society. In line with Gunasekaran, Subramanian& Rahman (2015), the current flow of resource, energy and environmental conservation has been received from all sectors around the world. This is because the world's energy supply, including oil and gas, is declining, not faster than expected. This is partly due to the industrial sector that emits greenhouse gases and the destruction of water quality and soil that are food sources of plants and animals, causing human food shortages and important factors in the livelihoods of ecosystem organisms. Aligned with Fahimnia, Sarkis, & Davarzani (2015) to all parties in the supply chain, whether producers, manufacturers, manufacturers, and other parties. Consumable Supplier or government agency Whether from greenhouse gas emissions, dust, thermal radiation, sewage and industrial waste, it is a real environmental issue. Therefore, there is a guideline for the study of logistics management and green supply chains to find solutions and reduce the negative impact on the environment that occurs throughout the supply chain. Effective management to reduce the environmental impacts caused by products as well as product cycles. In line with Ala-Harja & Helo (2014), environmental supply chain management is an emphasis on environmental impact in all processes related to supply chain management

by establishing relationships or integration between internal and inter-relevant organizations. Selection of raw materials, production, distribution, usage, reuse and disposal of goods must take into account the potential impact on the environment to a minimum. And in line with Nurul, Salina, and Hasmaizan (2016), green ideas are used in many organizations to solve environmental problems. Sustained cooperation can be developed through economic factors in the green industry. The green industry will focus on reducing the environmental impact on the production process as well as the United Nations Industrial Development Organization. (2016) Commented that the green industry is part of the sustainable economic development focused on the production and consumption of goods and services. At the same time as there is a reduction in the impact and risk of any consumption or production affecting the environment and ecology. Therefore, environmental management, combined with supply chain management, reduces the environmental impact of a particular organization's supply chain process by the principle of supply chain management.

SUGGESTION

Academic Suggestion

This finding confirms a finding consistent with the concept, theories and related research works reviewed by the researchers by obtaining the knowledge can be put to the ground. Define the sustainability model of Thailand's frozen seafood industry supply chain Frozen seafood industry operators can be used as a guide to effectively optimize supply chain management.

Recommendations in the next research

1. Study the impact of the environment on the frozen seafood industry business.
2. Study the legal measures of the frozen seafood industry to increase the competitiveness of entrepreneurs.
3. Guidelines for promoting logistical competitiveness of the digital economy

REFERENCE

Akhmetshin, R.; Shafigullina, A. (2015). Government regulation of small and medium entrepreneurship under the influence of value-time benchmarks. Mediterranean Journal of Social Sciences, 6, 151.

Ala-Harja, H., & Helo, P. (2014). Green supply chain decisions–Case-based performance analysis of the food industry. Transportation Research Part E: Logistics and Transportation Review, 69, 97-107.

Bangor Benjatikul. (2015). Human resource development in accordance with international guidelines. Journal of Chan kasemsan, 21 (40).

Bosona T., Gebresenbet G. (2013), “Food traceability as an integral part of logistics management in food and Agriculture supply chain”, International Journal of Food control, 33 (2013), 32-48.

Chaiwat Sowcharoensuk. (2562). Industry Outlook 2019-21: Processed Seafood Industry. Refer to from https://www.krungsri.com/th/research/industry/industry-outlook/Food-Beverage/Processed-Seafood/IO/I-processed-seafood-20-en.

Deming, D.J. (2017). The growing importance of social skills in the labor market. The Quarterly Journal of Economics, 132, 1593–1640.

Fahimnia, B., Sarkis, J., & Davarzani, H. (2015). Green supply chain management: A review and bibliometric analysis. International Journal of Production Economics, 162, 101114.

Gunasekaran, A., Subramanian, N., & Rahman, S. (2015). Green supply chain collaboration and incentives: Current trends and future directions. Transportation Research Part E: Logistics and Transportation Review, 74, 1-10.

Information Center, Ministry of Commerce. (2017). Statistics-Industry Report, Ministry of Commerce.

Mahul, O. & Stutley, C.J. (2010). Government Support to Agricultural Insurance Challenges and Options for Developing Countries. Washington: The World Bank

Nurul, A. A. S., Salina, D., Hasmaizan, H. (2016). Green Growth and Corporate Sustainability Performance. Proceed Economics and Finance, 35: 374–378.

Office of Industrial Economics. (2020). Thai Industrial Development Master Plan 2012-2031, Ministry of Industry.

Resende-Filho, M.A. & Hurley, T.M. (2017) Information Asymmetry and Traceability Incentives for Food Safety, International Journal of Production Economics 139(2), 596-603

Teerayut Kiatpiriyawong (2018). Food Industry Manpower Development Strategy and Strategic Drive 2018–2022, referred to by http://www.dsd.go.th/it/Region/Download_Doc/15906.

Tugce Akyazi, Aitor Goti, Aitor Oyarbide, Elisabete Alberdi and Felix Bayon. (2020). A Guide for the Food Industry to Meet the Future Skills Requirements Emerging with Industry 4.0. Foods, 9(492), 2-15. https://doi.org/10.3390/foods9040492

United Nations Industrial Development Organization. (2016). Accessible from https://progreencenter.org/2016/02/09/.

Wang, F., Lai, X. F., and Shi, N. (2011). "A multi-objective optimization for green supply chain network design", Decision Support Systems, Vol. 51 No. 2: 262-269.

Wisara Hunthani. (2012). Green Supply Chain for Sustainable Development. Thailand Environmental Institute Foundation. Green Business Journal, 6 (12): 11-12.

Yoann Guntzburger, Jérémie Théolier, Virginie Barrere, Ingrid Peignier, Samuel Godefroy, Nathalie de Marcellis-Warin. (2020). Food industry perceptions and actions towards food fraud: Insights from a pan-Canadian study, Food Control, 113, 107-182, https://doi.org/10.1016/j.foodcont.2020.107182.