

The Comparative Study of Logistics Cost Structure for Farmers' Siamese Fighting Fish

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Abstract

The purposes of this study were 1) to study logistics cost structure, and 2) to compare logistics activities classified by fish amount. The sample were 99 farmers. The questionnaire was used as the tool for data collection. The data was analyzed in term of frequency, percentage, means, standard deviation, minimum, maximum, One – way ANOVA, and Scheffe method. The results showed that logistics cost structure for farmers' Siamese Fighting fish consisted of two logistics activities including purchasing the input supplies and preparing the delivery. Logistics cost structure for farmers' Siamese fighting fish was 74,081.93 baht per year. The highest logistics cost was transportation for purchasing the input supplies. Moreover, Communication with buyers which is the lowest logistics cost. Furthermore, farmers with different fish amount had no the different level in logistics activities. Farmers with different fish amount had the different level in preparing the delivery with the statistical significance at .05 level.

Keywords: Siamese Fighting fish, logistics cost structure, logistics activities

1. Introduction

In 2015, Thailand is the seven largest exporters in the world. The total value of exports is US\$15.67 million, with a market share of 5.1 percent percentage of global [1]. Siamese fighting fish is favorite ornamental fish export from Thailand. The amount of export to global is 87,403 kilograms, value is 55,160,638 million baths [2]. Siamese fighting fish export to many countries such as Singapore, United States of America, China, Japan, etc.

The logistics cost is an important factor to manage Siamese Fighting fish Farm. Farmers should manage and control logistic cost because they will take competitive advantage. Moreover, customers satisfy and profit increase. The logistics cost structure consists of the activities of procurement, material handling, transportation, inventory, and customer communications [3]. The logistics cost depends on by farm size. Therefore, we investigate the comparative study of logistics cost structure for farmers' Siamese fighting fish. The objectives of this study are to study logistics cost structure, and compare logistics activities classified by fish amount. This study contributes to understanding of logistics cost. In addition, farmers can decide to choose suitable fish amount.

2. Objectives

1. To study logistics cost structure.
2. To compare logistics activities classified by fish amount

3. Review literature

The definition of logistics cost structure was entrepreneur activities cost such as purchasing, handling, inventory, serving [4] Logistics cost structure referred to resources allocation cost from supplier to customer [5]. [6] showed that logistics cost structure included procurement, material handling, transportation, inventory, and customer communications. Logistics cost structure had the different level classified by the size of farms. The logistics cost structure included procurement, material handling, transportation, inventory, customer service, and communications. The logistics costs varied by farm size. For example, farmers with small, medium and large size had the different level of material handling costs or preparing the delivery [3].

4. Methods

The population and sample

The population were 131 farmers in Nakhon Pathom Province 2015 [7].

The sample were 99 farmers by using Yamane formula [8].

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The questionnaire was used as the tool for data collection. The questionnaire consisted of two parts including demographic characteristics, and logistics cost structure. Three experts verified the content validity. The experts included academic and experienced farmers. Item of objective congruence index were more than 0.5. For reliability test, Cronbach's alpha coefficient were more than 0.70 [9].

Data analysis

The data was analyzed in term of frequency, percentage, means, standard deviation, minimum, maximum, One – way ANOVA, and Scheffe method.

5. Results

The results are presented in three parts as followings: demographic characteristics, descriptive statistics of logistics cost structure, One – way ANOVA, and Scheffe method.

Demographic characteristics

In the study, the majority of farmers, 69 (69.70%) were male, 32 (32.32%) were between the ages of 41 – 50 years, and 56 (56.57%) were elementary school. 46 (46.47%) of farmers had experience between 15 – 21 years and 61 (61.62%) of farmers had fish amount less than 50,000 fish. Demographic characteristics are shown in Table 1.

Table 1 Demographic characteristics

Descriptions	Frequency	Percentage
Gender		
Female	30	30.30
Male	69	69.70
Total	99	100
Age		
21 years and Lower	5	5.05
21 – 30 years	8	8.08
31 – 40 years	27	27.28
41 – 50 years	32	32.32
51 – 60 years	17	17.17
60 years upper	10	10.10
Total	99	100
Education Level		
Elementary School	56	56.57
Junior High School	27	27.27
Senior High School	9	9.09
Vocational Diploma	2	2.02
Bachelor degree	5	5.05
Upper than bachelor degree	0	0.00
Total	99	100
Experience		
1 – 7 years	0	0.00
8 – 14 years	29	29.29
15 – 21 years	46	46.47
22 – 28 years	14	14.14
29 – 35 years	6	6.06
More than 35 year	4	4.04
Total	99	100
Siamese Fighting fish owned by farmers		
Fewer than 50,000 fish	61	61.62
50,000 – 100,000 fish	25	25.25
100,001 – 150,000 fish	4	4.04
150,001 – 200,000 fish	3	3.03
200,001 – 250,000 fish	6	6.06
More than 250,000 fish	0	0.00
Total	99	100

Descriptive statistics of logistics cost structure

Logistics cost structure for farmers' Siamese Fighting fish consisted of two logistics activities including purchasing the input supplies and preparing the delivery. Purchasing the input supplies comprises

communication with suppliers and transportation for purchasing the input supplies. In addition, preparing the delivery comprises communication with buyers, material, equipment and packaging for preparing the delivery, and labor for preparing the delivery.

Logistics cost structure for farmers' Siamese fighting fish was 74,081.93 baht per year. The highest logistics cost is transportation for purchasing the input supplies which was 39,334.55 baht per year. Moreover, Communication with buyers which was the lowest logistics cost is 4,514.79 baht per year. Descriptive statistics of logistics cost structure are shown in Table 2.

Table 2 Descriptive statistics of logistics cost structure

Logistics Activities	Logistics Cost (Baht/Year)	Standard Deviation	Minimum	Maximum
1. Purchasing the Input Supplies	43,970.55	68,025.41	3,000.00	484,800.00
1.1 Communication with Suppliers	4,636.00	3,193.00	600.00	21,600.00
1.2 Transportation for Purchasing the Input Supplies	39,334.55	67,621.30	2,400.00	480,000.00
2. Preparing the Delivery	30,111.37	22,480.58	8,686.76	150,540.00
2.1 Communication with Buyers	4,514.79	3,264.87	400.00	21,600.00
2.2 Material, Equipment and Packaging for Preparing the Delivery	5,342.04	2,153.00	286.76	9,965.50
2.3 Labor for Preparing the Delivery	20,254.55	21,428.76	7,200.00	132,000.00
Total Costs of Logistics Activities	74,081.92	73,271.44	15,166.76	531,042.00

A comparative study of logistics activities classified by fish amount

The results indicated that farmers with different fish amount had no the different level in logistics activities. Nevertheless, farmers with different fish amount had the different level in preparing the delivery with the statistical significance at .05 level. A comparative study of logistics activities classified by fish amount are shown in Table 3.

Table 3 A Comparative Study of logistics activities classified by fish amount

Logistics Activities	F	Sig
1. Purchasing the Input Supplies	.849	.498
2. Preparing the Delivery	8.075*	.000
Total Costs of Logistics Activities	.444	.776

* p < .05

Post Hoc Tests

A comparative study of preparing the delivery classified by fish amount with Scheffe method are shown in Table 4. Farmers with less than 50,000 fish, and 200,001 – 250,000 fish had the different level in preparing the delivery. Farmers with 50,000 – 100,000 fish, and 200,001 – 250,000 fish had the different level in preparing the delivery. In addition, farmers with 150,001 – 200,000 fish and 200,001 – 250,000 fish had the different level in preparing the delivery.

Table 4 Post Hoc Tests

Fish Amount		Lower than 50,000 fish	50,000 – 100,000 fish	100,001 – 150,000 fish	150,001 – 200,000 fish	200,001 – 250,000 fish
	Mean	24,940.97	25,300.00	30,604.22	50,382.50	69,515.20
Less than 50,000 fish	24,940.97	-	-	-	-	-44,574.23*
50,000 – 100,000 fish	25,300.00		-	-	-	-38,910.98*
100,001 – 150,000 fish	30,604.22			-	-	-19,132.70
150,001 – 200,000 fish	50,382.50				-	-44,215.20*
200,001 – 250,000 fish	69,515.20					-

* p < .05

6. Discussion

In this study, logistics cost structure for farmers' Siamese Fighting fish consisted of two logistics activities including purchasing the input supplies and preparing the delivery which was in accord with the previous research [3], [6]. Farmers with different fish amount had the different level in preparing the delivery with the statistical significance at .05 level which was in accord with the previous research. [3]

7. Conclusions

The results from this research indicated that logistics cost structure for farmers' Siamese Fighting fish consisted of two logistics activities including purchasing the input supplies and preparing the delivery. Logistics cost structure for farmers' Siamese fighting fish was 74,081.93 baht per year. The highest logistics cost was transportation for purchasing the input supplies which is 39,334.55 baht per year. Moreover, Communication with buyers which is the lowest logistics cost was 4,514.79 baht per year. The results indicated that farmers with different fish amount had no the different level in logistics activities. Nevertheless, farmers with different fish amount had the different level in preparing the delivery with the statistical significance at .05 level. Farmers should plan transportation to decrease cost and control preparing the delivery cost.

References

- [1] Factfish Reserch. Thailand: Ornamental fish, live, export value (US \$)[Internet]. 2015. [cited 10 Aug 2017]. Available from <http://www.factfish.com>.
- [2] Fisheries trade statistics of Thailand. Fisheries trade statistics annual report 2015. 2015; p. 103.
- [3] Srisaeng, O., Chaveesuk, R., Suwandeochai, R., & Ongkunaruk, P. Analysis of production costs and logistics costs of white shrimp farming in Thailand. In Proceedings of the 48th Kasetsart University Annual Conference. 2010; 3-5 March.
- [4] Stępień, M., Łęgowik-Świącik, S., Skibińska, W., & Turek, I. Identification and Measurement of Logistics Cost Parameters in the Company. Transportation Research Procedia. 2016; 16: 490-497.
- [5] Christopher, M. Logistics & supply chain management. UK: Pearson Prentice Hall; 2016.
- [6] Ongkunaruk, P., & Piyakarn, C. Logistics cost structure for mangosteen farmers in Thailand. Systems Engineering Procedia. 2011; 2: 40-48.
- [7] Department of Fisheries in Nakhon Pathom Province. 2016.
- [8] Yamane, T. Statistics: an introductory analysis. NY: Harper and Row; 1973.
- [9] Cronbach, L. J. My current thoughts on coefficient alpha and successor procedures. Educational and Psychological Measurement. 2004; 64(3): 391-418.