LOGISTIC COSTS OF LIVE FISH TRADES IN THAILAND

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ABSTRACT

This study addresses the matter of logistic improvement of live food fish trade by economic analyses of pertinent information provided by the live fish traders in 2004 on three species of live fish: sand goby, sea bass, and grouper. The analyses take into consideration the logistics cost, break-even point, market margins, and sensitivity.

The study was found that live fish trade in Thailand is family business all the way through the whole operation from gathering of the live fish, value-added activities (grading by size and quality), and dispatching of commodities to the clients. The logistic cost comprises personnel (largely family members), purchase, storage, sale, and information as well as other variable cost, e.g. gasoline, wages etc. The logistical cost per market margin for sand goby, sea bass, grouper and all species is 76.96%, 33.08% 54.84% and 55.09% respectively. The costs of all wholesale businesses nowadays exceed the break-even points as the cost of gasoline alone has already made up 31.13%, 34.36%, 80.00% and 76.39% of all logistical costs respectively. Reduction of gasoline cost is therefore a strategic move for increasing the business efficiencies, and for the sustainability of the business. Cartel is another option for cost reduction strategy.

Keywords: Logistical costs, trades, and live fish.

BACKGROUND AND JUSTIFICATION

The changes brought about by the globalization, the severity of international trade competition, and the rapid advancement of information technology have made it possible to accelerate the movement of goods and the dispatching of information that transportation and taxes are no longer effective barriers. The key trade strategy is therefore the systematic movement of goods, the practice that evolves “logistics.” Logistics is a capacity for cost reduction where efficient coordination of various activities would make customers more satisfactory. It represents the value-added activity that moves goods from its source to another location where they are in greater demand. Logistics provides an appropriate means of transportation of goods that come in the right quantity, quality, and temporal frames; and its most important attribute is the competitive cost. All these logistical attributes are applicable to the live food fish trade where cost is a very important factor. A detailed logistical cost research can be used to guide efficient business plans, something that makes it possible to develop a greater efficient food fish supply chain.

OBJECTIVES

To look into the types, roles, and status of the live fish trade;
To analyze the wholesale's logistical cost; and
To recommend ways and means for the improvement of the wholesale's efficiency

BENEFITS

To guide the development of the supply of live food fish species; and
To serve as a database for live food fish chain.

METHODOLOGY

Data collection : Primary data were obtained from in-depth interview of all live food fish traders (for sand goby, sea bass, and grouper) at the main production source. In all 13 traders were interviewed in 2004 at the production area. Secondary data were obtained from statistical reports and other documents pertaining to food supply logistics, and research papers on the improvement of business efficiencies;
Analyses : Analysis was performed on activity pertaining to the traders of each species of live food fish. Market margin analysis, where small market margin was evident, highly efficient marketing system supported by a high competition and lower profits prevails. Analysis of break even point for the purpose of efficiency improvement and sensitivity analysis.

Logistic Cost	=	*Fixed cost +Variable cost*
Market Margin	=	*Purchasing Value – Selling Value*
	=	*Logistic cost + Profit*
*Break even point: Q**	=	*TFC/ (P-AVC)*
TFC	=	*Total Fixed Cost (Baht/Year)*
P	=	*Price (Baht/Kg)*
AVC	=	*Average Variable cost (Bath/Kg)*

RESULTS

Type and Roles of Business

All the live food fish trade under this study were all family undertakings. Roles of logistics: important elements of live food fish trade logistics come in five categories: ***Personnel:*** As they are family business, the owners are also operators and decision-makers for 1-2 employees who are normally family members; ***Purchasing:*** The business gathers live food fish from various sources and delivers them to the consumers. The management of the procurement is the most important activity of the traders. ***Storage:*** As a commodity, the live food fish comes in all sizes and unpredictable quantity, the traders need to keep the live fish under their care until such time that their sizes and quantities meet the market demands. Live sand goby traders need to keep the fish in cages or cement cisterns until they have the right quantity that can be transported profitably. Sea bass and grouper traders can hardly afford to keep their live fishes under their care as they are too costly. It is known among the live fish traders that the costs and the risks in keeping the fish are far too high, and they normally ship them right away. ***Sale:*** This is the most important activity in the live food fish trade as the traders must shorten the handling as much as they can to avoid unnecessary risks and losses. The key in the live food fish trade is to dispose off the goods in shortest possible time, while weighing the sale and the procurement that yields the highest profit. ***Information*:** As the live food fish market has no system that provides information on the market prices and active customers, communication must depend largely on the words of mouths. With the advancement of IT where traditional and mobile phones make it

more convenient, the words of mouths have continued to be the key channel although at a much lower cost.

Analyses of live food fish logistical costs

Total cost of the live food fish trade: On the average, the total cost of the live food fish trade comprises 88.71% of variable cost and the rest 11.29% of fixed cost.(Table I) Among the variable cost, gasoline made up as much as 80.29% (24.15%+56.14%) of the total cost.

The logistic cost structure : The logistic cost of live fish trade are following : selling cost is 59.06 %, of purchasing is 29.51 %, personal is 9.98 % , information cost is 1.44 % and the storage cost is 0.01 % of total cost . (Table II)

Comparative market margin of live sand goby, sea bass, and grouper trade : The market margins in Thai baht are 396.51, 703.12, 21, and 784.35 thousand bath respectively, bringing the overall market margin of 23,451.00 thousand baht. In terms of annual profit, the sand goby, sea bass and grouper traders produce on an average 222.02, 470.53, and 9,838.16 thousand baht, with the overall profit of 10,530.74 thousand baht. While the overall logistical cost is 55.09% of the market margin, it was found that the live sand goby, sea bass, and grouper trade had their percentages of 76.96%, 33.08%, and 54.84%. The figures show that live sand goby trade was fraught with high logistical cost (and low profit), the live sea bass trade was comparatively the best as its profit margin was quite high. The overall logistical cost of 55.09% is considered as high. (Table III)

Break even point: The break even points of the live sand goby, sea bass and group trades was incurred at 8.69, 6.14, 96.03 ton respectively, with the overall break even point was at 124.12 ton. As shown in Table IV, the lower break even point of the live sea bass trade makes it more attractive as the lower investment is involved. (Table IV)

Sensitivity analyses: Key variable cost is gasoline which made up to 76.39 % of the overall cost, any changes in gasoline cost directly affects the logistical cost. Therefore, where gasoline cost varies 60.61% (gasoline price in 2004 is 16.50 baht / litter and 25.50 baht/litter in 2005, the logistical cost could vary as much as 52.80%.(Table V)

CONCLUSION

The logistical cost of 55.09% of the market margin is quite high comparing with 17-20% of over all Thai logistic cost, and their profit on logistical cost of 81.50%. The high profit on investment ratio can still support the trades for some time in light of the volatile gasoline cost. The long-term maintenance of the logistical cost on the market margin could be made obtainable by the logistical cost reduction, especially the gasoline cost.

RECOMMENDATION

In order to sustain the efficient live fish supply chain, all stakeholders should participate actively especially the following parties:

Private business in related trades with an aim at cost cutting; especially in gasoline used or energy used. Public agencies in the supply of information and facts on marketing, modern production technology, and logistical technology transfer. The public agencies could also invest in infrastructure, e.g. transportation, production and market information.

Table I Percentage of Live Fish Logistic Cost By Species

Unit :Percentage

Logistic Cost	Live Fish Trade											
	Sand Goby			Sea Bass			Grouper			All Species		
	FC	VC	Tot.	FC	VC	Tot.	FC	VC	Tot	FC	VC	Tot
Personal	25.17	10.79	35.96	31.92	10.64	42.56	6.19	1.55	7.73	6.49	1.65	8.14
Purchasing	15.64	32.47	48.11	6.51	22.20	28.71	1.64	26.73	28.37	1.70	25.66	27.36
- Gasoline	-	22.49	22.49	-	17.18	17.18	-	24.00	24.00	-	24.15	***24.15***
- Other	15.64	9.98	25.62	6.51	5.02	11.52	1.64	2.73	4.37	1.70	1.51	3.21
Storage	0.22	0.01	0.23	-	-	-	-	-	-	-	-	-
Selling	3.35	10.88	14.23	6.16	19.70	25.86	2.42	60.06	62.48	2.49	60.54	63.03
- Gasoline	-	8.84	8.84	-	17.18	17.18	-	56.00	56.00		56.14	***56.14***
- Other	3.35	2.04	5.39	6.16	2.52	8.68	2.42	4.06	6.48	2.49	4.40	6.89
Information	0.61	0.86	1.47	0.55	2.32	2.87	0.31	1.10	1.41	0.61	0.86	1.47
%	44.99	55.01	100.00	45.15	54.85	100.00	10.57	89.43	100.00	11.29	88.71	100.00

Foot note : FC = Fixed cost
VC = Variable cost
Tot. = Total

Table II Logistic Cost Classified By Type of Cost

Unit : 1,000 Baht/Year

Logistic Cost	Live Fish Trade				
	Sand Goby	Sea Bass	Grouper	All Species	%
1. Personal	266.65	99.00	924.00	1,289.65	9.98
2. Purchasing	356.74	66.77	3,388.77	3,812.28	29.51
3. Storage	1.70	-	-	1.70	0.01
4. Selling	105.53	60.15	7,463.40	7,629.08	59.06
5. Information	10.86	6.67	167.85	185.38	1.44
Total	741.48	232.59	11,946.20	12,920.27	100.00

1 US$ = 38.00 Baht

Table III Percentage of Logistic Cost and Market Margin

Unit : 1,000 Baht/Year

Title	Live Fish Trade			
	Sand goby	Sea Bass	Grouper	All Species
Logistic Cost	741.48	232.59	11,946.20	12,920.27
Purchasing Value	3,807.00	2,651.51	189,606.68	196,065.19
Selling Value	4,770.51	3,354.63	211,391.06	219,516.20
Market Margin	396.51	703.12	21,784.35	23,451.00
Net Profit	222.02	470.53	9,838.16	10,530.74
Percentage [1/] (%)	76.96	33.08	54.84	55.09
Percentage [2/] (%)	29.94	202.30	82.35	81.50

[1/] Percentage of Logistic Cost and Market Margin

[2/] Percentage of Net Profit and Logistic Cost

Table IV Break Even Point of Live Fish Business

Unit : 1,000 Baht/Year

Logistic Cost	Live Fish Trade			
	Sand Goby	Sea Bass	Grouper	All Species
Fixed Cost	741.48	232.59	11,946.20	12,920.27
Variable Cost	407.91	127.59	10,684.01	11,219.51
Market Margin	963.51	703.12	21,784.35	23,451.00
Net Profit	222.02	470.53	9,838.16	10,530.74
Business Volume (Ton/Year)	14.48	33.620	844.53	892.63
BEP [1/] (Ton/Year)	8.69	6.14	96.03	124.12

[1/] BEP at net profit = 0

Table V Sensitivity of Logistic Cost

Unit : 1,000 Baht /Year

Title	Live Fish Trade			
	Sand Goby	Sea Bass	Grouper	All Species
Logistic Cost	741.48	232.59	11,946.19	12,920.27
Gasoline Cost	232.30	79.92	9,557.27	9,869.49
% of Gasoline Cost	31.13	34.36	80.00	76.39
Logistic Cost (Baht/kg)	51.21	6.92	14.15	14.47
Gasoline Cost (Baht/kg)	16.04	2.38	11.32	11.06
Gasoline Cost [1/] (Baht/kg)	3.13	3.44	8.00	7.64
Logistic Cost [1/] (Baht/kg)	54.34	10.36	22.15	22.11
% Change [1/] of Logistic Cost	6.11	49.71	56.54	52.80

[1/] Gasoline price was increased 60.61 % (From 16.50 to 25.50 Baht / liter)

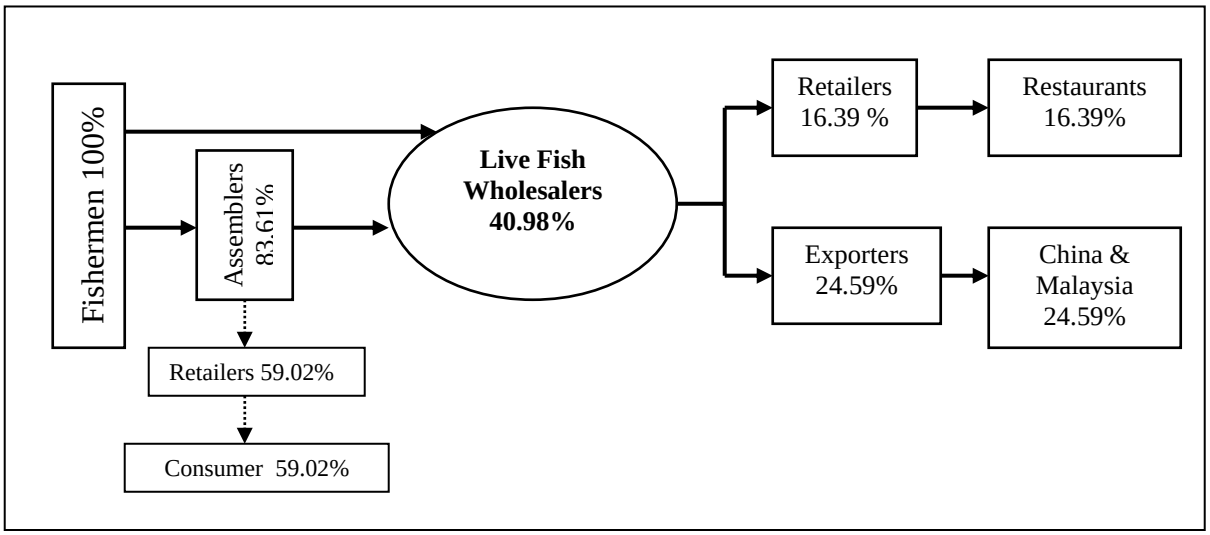

Figure 1. Logistic flow chart of live sand goby

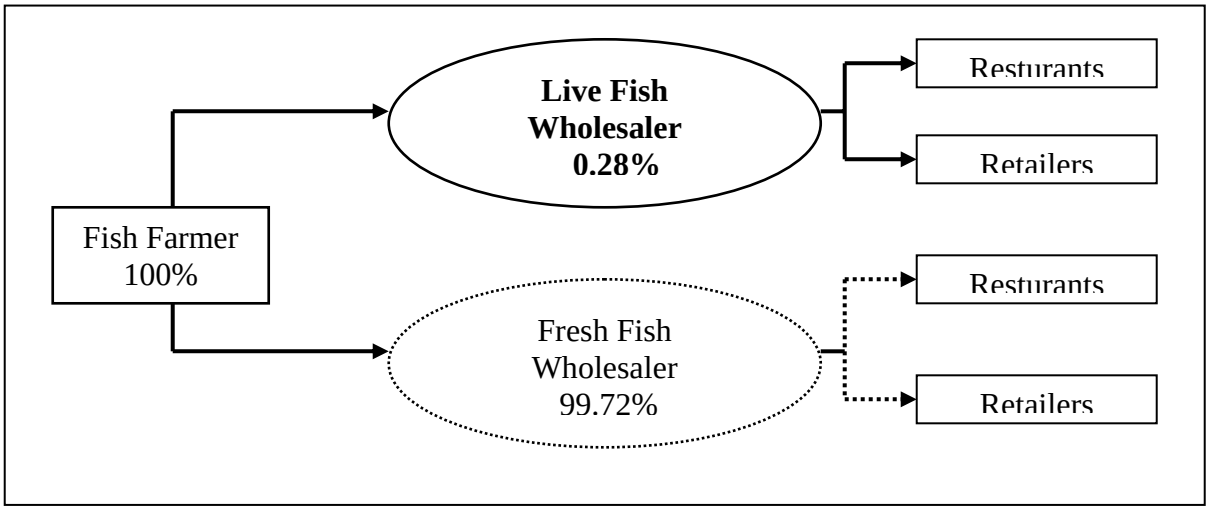

Figure 2. Logistic flow chart of live sea bass

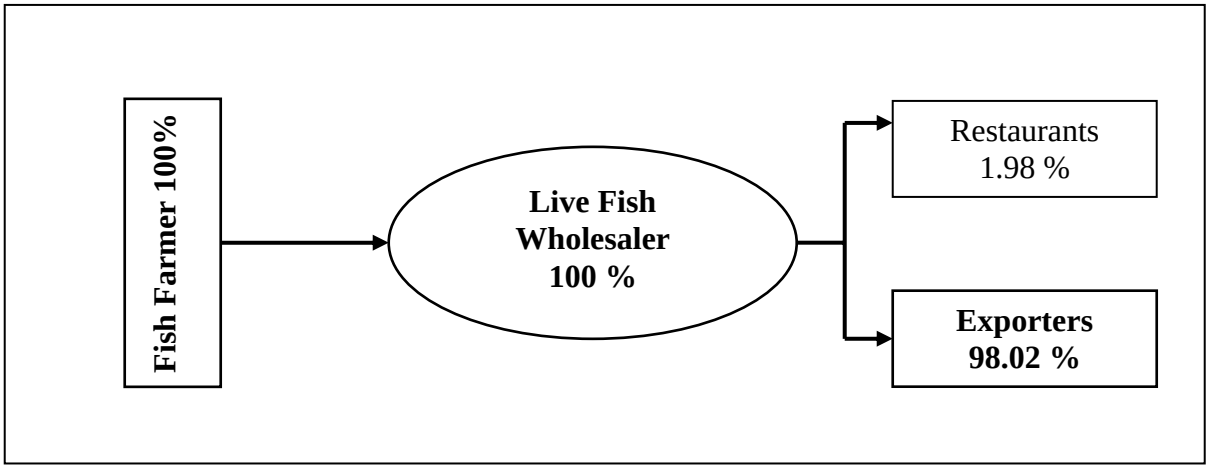

Figure 3 . Logistic flow chart of live Grouper

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