



Strategies for Adapting to the Increased Labor and Fuel Costs for Commercial Fishing Boat Operators: Case Study in Tha Sala District, Nakhon Si Thammarat Province, Thailand

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ABSTRACT: The objective of this study is twofold: 1) to examine the cost and return structure of commercial fishing boat operators in Tha Sala district, Nakhon Si Thammarat province, and 2) to study the adjustment strategies and assistance measures for the group of commercial fishing boat operators in Tha Sala district, Nakhon Si Thammarat province. The sources of data used in this research are 1) commercial fishing boat operators in Tha Sala district, Nakhon Si Thammarat province, and 2) government agencies related to commercial fishing boats. The study will use a snowball sampling technique, focus group discussions, and in-depth interviews with a set of predetermined questions. The results of the study show that the cost and return structure comprises five constant costs: labor costs, foreign document costs, boat registration costs, boat permit costs, and straight-line depreciation costs. Since 2020, the average cost per year has been 442,425 baht. In 2021, the average cost is still 442,425 baht, while in 2022, it increases to 445,425 baht due to fluctuations in cost factors, which include fuel prices, rice prices for fishermen, ice costs, and maintenance expenses. The return on investment for the past three years has been continuously decreasing, with an average of 7,200,000 baht in 2020, 6,200,000 baht in 2021, and 2,700,000 baht in 2022. The fishing boat operators have made adjustments in three areas to combat rising fuel costs: reducing work days, adjusting product processing, and relying on technology and innovation. However, the government and other public entities have no direct role in assisting commercial fishing boat operators dealing with rising labor costs and fuel prices. The only indirect assistance comes through a loan project that uses the fishing boats as collateral, and this has been available only once during the three-year period from 2020 to 2022 when labor and fuel costs were at their highest.

KEYWORDS: Adaptation, Cost, Commercial fishing, Entrepreneur, Impact, Labor cost.

INTRODUCTION

Thailand has an exclusive economic zone for commercial fishing covering a total area of 368,280 square kilometers. Approximately 252,000 square kilometers are located in the Gulf of Thailand, while the remaining 116,280 square kilometers are in the Andaman Sea. Thailand is a major exporter and producer of seafood and marine products in the world, and its income is largely derived from exporting these products and bringing revenue into the country. Thailand's commercial fishing industry is highly competitive and recognized by importing countries. According to the export report of Thai seafood and marine products in 2019, Thailand had a high potential in commercial fishing and was accepted by importing countries. Thailand is a major exporter and producer of seafood and marine products, with a total area of 368,280 square kilometers of exclusive economic zone for commercial fishing in Thailand. The fishing area is divided into approximately 252,000 square kilometers on the Gulf of Thailand and approximately 116,280 square kilometers on the Andaman Sea. Thailand is a significant exporter and producer of seafood and marine products worldwide, generating a total export value of 5.621 billion US dollars in 2020, which accounts for 2.3% of Thailand's total exports. Of this amount, 1.847 billion US dollars (32.8%) came from the export of fresh seafood, including live shrimp, fresh fish, squid, crabs, and oysters, while processed seafood products, including canned seafood and processed seafood, accounted for approximately 3.775 billion US dollars (67.2%). Thailand's thriving seafood industry has led to commercial fishing operations in several provinces along both the Gulf of Thailand and the Andaman Sea. (Source: Ministry of Commerce, Thailand, 2021) "Deep Sea Fisheries" refers to the capture of aquatic animals at a distance of no more than 200 nautical miles from the coastline. In the commercial fishing sector on the southern coast of the Gulf of Thailand, there are several operators, with those in Nakhon Si Thammarat province ranked among the top in the country. The coastline in this area stretches for 225 kilometers and is divided into six districts. Among them, the coastline in Khanom district is 38 kilometers, the coastline in Sichon district is 27.5 kilometers, the coastline in Tha Sala district is 31 kilometers, the coastline in Mueang Nakhon Si Thammarat district is 26.1



kilometers, the coastline in Pak Phanang district is 74.5 kilometers, and the coastline in Hua Sai district is 27.6 kilometers. The population in the districts adjacent to the coastline engages in fishing as a profession, with a total of 1,276 registered commercial fishing vessels, consisting of 147 longtail boats with outriggers, 882 longtail boats without outriggers, 238 twin-hulled boats, and 9 trawlers (Department of Fisheries, Nakhon Si Thammarat, 2008).

In the operation of commercial fishing vessels, important production costs include labor costs and fuel costs, which are among the top factors affecting business operations. The reason for this is due to changes in labor policy set by the Ministry of Labor, which sets the minimum wage for fishermen at 400 baht per day (Ministry of Labor, 2017). In addition, there are now international regulations set by the International Labor Organization (ILO), which require commercial fishing vessel operators to provide minimum guarantees for work on board fishing vessels, as well as accommodation and various benefits for all types of fishing workers. Apart from labor costs, the impact of fuel prices is also a major concern for commercial fishing vessel operators.

According to a report from the (Bank of Thailand, 2022) crude oil prices have risen to a new high in the past 7 years, with prices as high as \$90 per barrel. Meanwhile, Goldman Sachs and JPMorgan predict that Brent crude oil prices may soar up to \$100 per barrel this year. PTT Public Company Limited, a Thai oil and gas company, forecasts that crude oil prices will be around \$83-84 per barrel in the first 6 months of this year, compared to \$81 per barrel in November of the previous year. The latest figures from the Bank of Thailand reveal that fuel prices have increased by 27% since January 2021, while meat prices have gone up by 22%. During this period, households with low incomes have been hit the hardest, especially in terms of food and energy expenses.

Therefore, the continuous increase in oil prices and the government's policy to adjust the minimum wage have resulted in commercial fishing boat operators having to struggle with the cost of fishing. Hence, this is the background for conducting a research study on "Strategies for Adjustment in the Context of Increasing Labor and Oil Costs for Commercial Fishing Boat Operators in Tha Sala District, Nakhon Si Thammarat Province". The aim of this study is to investigate the impacts of labor and oil cost on fishing operations, as well as to explore possible adjustment strategies in response to the current situation of increasing labor and oil costs. The objectives of this study:

1. To study the cost structure and returns on investment of commercial fishing boat operators in Tha Sala District, Nakhon Si Thammarat Province.
2. To study the strategies for adaptation and support measures for the group of commercial fishing boat operators in Tha Sala District, Nakhon Si Thammarat Province.

THEORETICAL REVIEW

Theoretical framework on adaptation

According to Coleman (1981), the coping process involves an individual's attempt to address a problem or obstacle. The person then adapts the situation to better suit their needs, such as dealing with issues related to self-image, desires, or problem-solving. Arkoff (1968) proposed the concept of adaptive behavior, which emphasizes the importance of the environment in shaping an individual's behavior and abilities. According to Arkoff, individuals must be able to adjust their behavior to fit the demands of their environment in order to achieve their goals. This involves coordinating their physical, emotional, and cognitive states with the environment in which they find themselves. Individuals must also be able to recognize and respond appropriately to changes in their environment in order to adapt effectively. By doing so, individuals can achieve a sense of satisfaction and fulfillment in their lives, and establish long-term success in society.

Adaptation theory of (Roy, 1976, p.22) which presents interesting study of 4 types of adaptation as follows: 1) physical aspect (Physiologic mode) 2) self-concept aspect (Self-concept mode) 3) Role function mode 4) Interdependence mode (Interdependence mode) According to Nipha Nithayayarn's (2007) model of the process of adjustment, the term "adjustment" refers to the various behavioral responses made to cope with stressors, driving and motivating forces, and demands from within and outside the individual. The process of adjustment includes both internal and external adaptations.

McKee et al. (1989) expressed their perspective on the concept of entrepreneurial adjustment, stating that it is a method that involves collecting and synthesizing data from external environmental conditions. This data is then used as indicators for business adjustment. By collecting and processing data from the external environment, entrepreneurs can adjust their strategies to be more appropriate for the competitive context of the market. Market strategy and survival strategies of a business dimension require constant adjustment from entrepreneurs, as no entrepreneur can survive in business without adaptation to the changing social



environment. The need for adjustment in business strategies is determined by various factors that are encountered in the environment.

According to Jovanovic (1982), the theory of survival dimension for entrepreneurs suggests that there are several factors that contribute to a business's ability to survive, including: 1) Entrepreneur education 2) Family background 3) Development of creative abilities and innovative thinking skills 4) Growth factors and business size 5) Factors related to the duration of the business

Cost Analysis and General Information for Commercial Fishing Vessels

Sussams (1992) proposed a model of commercial fishing vessel costing with the concept of Cost data collection should include the costs incurred even if the vessel is in port. It is the cost per unit of time that is paid and the capital ton incurred during berthing and sailing. Therefore, the cost of using ships is divided into 3 types, namely, time-related costs. Costs related to distance and regular expenses 1) Costs related to time, including crew and captain wages Annual boat tax boat insurance depreciation (Calculated as a fixed payment each year), etc. 2) Costs related to distance, including employee wages. (divided by percentage of profit each time) fuel and lubricant expenses depreciation (If calculated based on distance), maintenance fees, etc. 3) Regular expenses such as management fees, docking fees various administrative fees (communication, administrative, scheduling), etc.

The research questions are:

1. The structure of costs and returns of commercial fishing vessel operators consists of What is relevant and what is trending.
2. Commercial fishing vessel operators have strategies to adjust from the impact of rising prices. and the rate of labor.
3. Guidelines for assistance from relevant government agencies for fishing boat operators How will commerce be affected by rising oil prices and labor costs.

RESEARCH METHODS

This research is a qualitative research. It will use data sources from 8 commercial fishing vessel operators and 6 government agencies involved in commercial fishing vessels. The subject research "Strategies for adapting in the situation of rising labor costs and oil prices for commercial fishing boat operators in Tha Sala District Nakhon Si Thammarat Province, Thailand" this time, the researcher has actually visited the area by himself. The snowball sampling strategy will start from a number of qualified samples. Then use the selected sample or recommend or nominate other samples. that resembles itself to form a chain and to collect data using data collection techniques and data collection tools, such as Focus Groups Discussion and In-depth Interview questionnaires. There will be sources of information that are commercial fishing boat operators.

1. Determine the study area. The researcher selects a group of 8 commercial fishing boat operators by purposive sampling in Tha Sala sub-district, Tha Sala district, Nakhon Si Thammarat province and 6 government agencies involved in commercial fishing boats.
2. Do fieldwork After the researcher coordinated with the data source to support the qualitative data collection. to explain the purpose of the study along with asking for the researcher's assistance to conduct a research study.
3. Preliminary exploration of the data to explore the context. and how to manage resource management organizations both inside and outside the organization.
4. Data Collection From the research team has coordinated with the relevant networks in the area. to ask for cooperation to advise researchers and coordinate data collection of the samples by conducting group conversations.
5. Data analysis From the data in this study, with the principle of content analysis (Content analysis) is the collection of data to study the context from the actual area, including the method of group discussion. In-depth interviews and participant and participatory observation. To write, describe and interpret the information of the area according to the facts and from the collection and classification according to the type of information. and analysis based on the conceptual framework of the above study.

RESEARH RESULTS

The research results have found according to the main objectives, which can be summarized into 3 issues. The first issue is the discovery of the cost structure and returns on investment in the commercial fishing business operations of entrepreneurs in Tha Sala District, Nakhon Si Thammarat Province, for the past 3 years. The second issue is the discovery of adjustment strategies.



The third issue is the ways to assist the commercial fishing entrepreneurs in Tha Sala District, Nakhon Si Thammarat Province, which are detailed as follows.

1. The cost structure and returns on investment in the commercial fishing business operations of entrepreneurs in Tha Sala District, Nakhon Si Thammarat Province, for the past 3 years.

In the operation of commercial fishing boat entrepreneurs in Tha Sala District, Nakhon Si Thammarat Province, it was found that the commercial fishing boat entrepreneurs in Tha Sala District, Nakhon Si Thammarat Province have 5 cost components, including the cost structure of the fixed costs of conducting business. These 5 components are labor costs, foreign document costs, boat registration fees, permit certificate fees, and straight-line depreciation costs. The fixed costs of commercial fishing boat entrepreneurs in the past 3 years from 2019-2021 are as follows: In 2019, the average cost was 442,425 baht per year, in 2020, the average cost was 442,425 baht per year, and in 2021, the average cost was 445,425 baht per year. In terms of cost fluctuations, commercial fishing boat operators have found that factors such as fuel prices, the cost of rice for crew members, ice costs, and maintenance costs have affected their expenses. In 2020, the cost variation was at 756,722 baht, in 2021 it was at 816,750 baht, and in 2022 it was at 1,050,225 baht, indicating an upward trend in the costs of commercial fishing boat operators based on the above data. In terms of returns, it can be summarized and discussed that according to the researcher's findings, which are in line with the same direction, the returns of these operators have continuously decreased for three years starting from 2020. The average return for operators was 7,200,000 baht in 2020, 6,200,000 baht in 2021, and 2,700,000 baht in 2022, clearly demonstrating a significant decrease in returns for commercial fishing boat operators in the Tha Sala district.

2. Adjustment Strategies of Commercial Fishing Boat Operators in Tha Sala District, Nakhon Si Thammarat Province, Thailand. In this strategy for adaptation, the findings can be summarized and discussed into three aspects as follows.

2.1) On the price aspect of oil, business operators have adjusted in 3 ways: 1) reducing the number of operating days, meaning during periods where the oil price situation is not favorable, most business operators will only go out to sea twice a month to catch aquatic animals in order to survive in the business; 2) assessing the breakeven point with the lost oil, meaning business operators will check the amount of aquatic animals caught with other business operators, or have workers reduce the amount of gold used to tow the net during daytime and switch to nighttime to check the amount of aquatic animals caught with the amount of oil used to tow the net each time; and 3) adjusting to the oil price, meaning business operators will estimate the period when oil prices go down in order to buy oil at a lower cost as a cost-saving measure. On the contrary, if oil prices soar, they will not buy oil during that period.

2.2) On product processing, businesses have adjusted themselves by changing their selling methods or switching from wholesale to retail. There are three main approaches: 1) Traditional selling, which involves a middleman or fishmonger buying all the caught seafood and selling it at a predetermined price. 2) Retail selling, which is a new selling method that emerged after the COVID-19 pandemic and the increased cost of oil. This approach allows business owners to also become retailers. 3) Online selling, which is a retail selling method that has moved to the online world. This approach can increase sales and expand the customer base.

2.3) The role of technology and innovation in adaptation is twofold, namely "finding fish" and "selling fish." Finding fish refers to the business operations of operators who go out to sea to catch aquatic animals, where technology and innovation play a role in this aspect through the VMS (Vessel Monitoring System) or the system that tracks the position of the vessel. This technology not only helps to map the vessel's route and track it, but also helps the operator reduce costs to save time and travel expenses. Selling fish refers to a new way of selling seafood by using social media on online platforms. This type of selling is a retail method for the seafood caught by the operator, which can create new customer groups for the operator and increase the value of the seafood caught, as well as increase the return on investment for the operator.

3. Guidelines for assisting the group of commercial fishing boat operators in Tha Sala District, Nakhon Si Thammarat Province, Thailand.

It can be seen that the roles of the Department of Fisheries and the Port Authority have a role that relies on the law as a mechanism for control. They mainly supervise and monitor to ensure that business operators comply with the enforced laws. In other words, they are the agency that oversees and ensures that the fishing business operates smoothly according to the law, with their role being to monitor compliance. It promotes a little reward for product processing and has only a few assistance programs, whereas the Department of Social Welfare and Labor Protection focuses on protecting workers' welfare, safety, and occupational health at work.



The discussion on the dimension of assistance provided by the government agencies reveals that there is no direct role or approach to assist commercial fishing vessel operators in the situation of increasing labor costs and oil prices. However, it was found that during the period from 2020-2022, when the oil price and labor rate increased, there was only one indirect assistance approach through the loan project by using the vessel as collateral, guaranteed by the Department of Fisheries. This is the only assistance provided by the government agencies.

Proposal for Future Research

For future research, researchers see the need for research on the use of alternative energy to reduce costs in conducting business for commercial fishing vessel operators in the future.

Policy recommendations

1. From the study results, it was found that the recommendation from the commercial fishing vessel operators to the relevant government agencies is to establish a One-Stop Service Center to facilitate coordination in various areas, including the management of foreign labor documentation and vessel registration, among others. This will help operators save time and reduce travel expenses.

2. Recommendations from the business operators suggest that the government should provide support to reduce or subsidize the price of oil or alternative green energy sources, which are essential factors in operating commercial fishing vessels, in order to return to normal conditions and reduce the cost of business operations, aligning with the return on investment received from the sale of fish.

3. The suggestion from the business owners is that due to the lack of control over the import of frozen seafood from other countries, it has resulted in a decrease in the price of domestic seafood products in Thailand. Therefore, the business owners propose that the relevant government agencies should support the price of domestic seafood products and control the amount of imported frozen seafood products.

REFERENCES

1. Arkoff, A. (1968). Adjustment and mental health. New York: McGraw-Hill.
2. Bank of Thailand. (2022). Innovation for cost-saving during the era of expensive oil prices. Retrieved from <https://www.thairath.co.th/business/feature/2314836>
3. Coleman, James C, and Hammen, (1981). Abnormal Psychology and Modern Life. New York : Bombay.
4. Department of Labor Recruitment. (2022). Confirm the salary of "fishermen" at 12,000 baht, high wages, attracting people to work Retrieved from <https://www.doe.go.th>.
5. Department of Fisheries. (2002) Nakhon Si Thammarat Fisheries Retrieved from <https://www.nakhonsithammarat.go.th/pramong.php>
6. Information Center for International Trade Negotiations. (2020). Information on seafood and fishery products that are Thai exports in 2019. Retrieved from: <https://www.dtn.go.th/th/content/category/detail/id/1564/cid/1566/iid/2820>
7. Jovanovic, Boyan .(1982). Selection and the Evolution of Industry. Econometrica, Econometric Society, vol. 50(3), pages 649-670.
8. McKee, D.O., Varadarajan, P.R. and Pride, W.M. (1989). Strategic adaptability and firm performance: a market-contingent perspective. Journal of Marketing, 53(3) , 21- 35.
9. Nipa Nittayayon. (1987). Adaptation and Personality Psychology of Education and Life, Bangkok.
10. Sussams, J.E. (1992). Logistics Modeling. London: Pitman Publishing.
11. Longenecker, J. G., Moore, C. W., Petty J. W., & Palich, L. E. (2006). Small Business Management: An Entrepreneurial Emphasis. NP: South-Western.
12. Beach, Lee Roy.(1976). Psychology Cove Concept and Special Topic. New York : Holt, Rinehart and Winston.

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