



## Upgrading Safety Shrimp Farmers to Digital Entrepreneurs of Nakhon Pathom Province

Kasamol Chanasuk<sup>1,\*</sup>, Sompon Sukcharoenpong<sup>1</sup>, Wallapa Wichayawong<sup>1</sup>, Noppadol Maneerat<sup>1</sup>,  
Saowanee Mahaprom<sup>1</sup>, and Jemine Settheerathanand<sup>1</sup>

<sup>1</sup> Faculty of Management Sciences, Nakhon Pathom Rajabhat University

### Abstract

Nowadays, technology and marketing are rapidly changing. Therefore, to run a successful business, farmers need to be equipped with both theory and digital skills. This research focuses on the investigation and development of a short training course to improve the knowledge required for shrimp farmers to become digital entrepreneurs. The purposes of this research study were to 1) develop a course for safety shrimp farmers in Nakhon Pathom province to become digital entrepreneurs; 2) prepare an electronic manual on a digital entrepreneurship course and business alliance network linkage in Nakhon Pathom province; and 3) create business alliance networks for safety shrimp farmers in Nakhon Pathom province to become digital entrepreneurs. The problem scenario and needs of a group of 100 farmers, as well as the knowledge of eight experts in entrepreneurship, were investigated in order to design the course and the electronic manual.

The results found that 1) the developed digital entrepreneurship course is 16-hour training, consisting of 4 units necessary to upgrade farmers' knowledge to become digital entrepreneurs: 1) smart farming technology, 2) marketing, 3) finance and accounting, and 4) business plan. The suitability of the course was at the highest level with an average of 4.95. In addition, the result of the trial with a sample of 30 people showed that the participants' scores after attending the course were significantly higher than before learning at the level of .05. 2) The examination of the course manual showed that it was an electronic book on a web application that was most suitable for the participants with an average of 5.00. The participants were most satisfied with the course and electronic manual with an average of 4.60. 3) The business alliance networks were created by organizing focus groups to provide opportunities for all participants to build good relationships, form partnerships, and work with mutual benefit. The knowledge and expertise of each person could be used to create new things, providing a platform for workers to develop or solve common problems together. As a result, enhancing knowledge and the ability to stay up with current situations might strengthen one's potential, leading to the success of running a business.

**Keywords:** shrimp farmer, digital entrepreneur, training course

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### 1. Introduction

With the current Thai Economic Council in the process of adapting and wanting to turn crisis into opportunity for sustainable development, the government has issued various policies to push and accelerate the country's economic recovery. Nakhon Pathom province is one of the metropolitan provinces

affected by the emerging economic conditions, but there are signs of improved economic conditions. In August 2022, the Fiscal Conditions Report of Nakhon Pathom province demonstrated economic expansion, indicating that the economy in the province has continued to expand compared to the same month of 2021.

\*Corresponding author; e-mail: Kasamol2520@gmail.com

After easing the control of the pandemic and travel restrictions, most of the economic activities have returned to a normal state, as can be seen by the expanding supply-side economy. The service output index has expanded by 27.7 percent. The industrial output index has expanded by 7.4 percent, but the agricultural productivity index shrank by - 5.2 percent, which was due to risk factors, health problems on farms, continuing higher costs of cultivation, and adaptation of the farming system to biological safety [1].

At present, agricultural production in Nakhon Pathom province comes in part from aquaculture. The main aquaculture production for consumption comes from three economic aquaculture: Vannamei white shrimp, giant freshwater prawn, and Nile tilapia. The total production is about 90 percent of the total aquaculture production for the year 2020. The proportion of aquaculture production for only Vannamei white shrimp accounted for 47 percent and giant freshwater prawns accounted for 31 percent. In 2021, the consumption of Vannamei white shrimp trended up, but the giant freshwater prawn declined slightly due to the safety confidence affected by the COVID-19 pandemic situation, with yields equal to 4,131,115 and 2,028,890 metric tons, respectively [2].

In the past, the shrimp industry in Thailand used to be the main income-generating industry for the country. Thailand was the world's number one shrimp exporter in 2010. However, after 2012, the pandemic of quick-dead shrimp caused Thailand's shrimp production to decline by more than half and lose enormous economic value. At present, many agencies are working together to solve urgent problems in order to revive the economy and resume the Thai shrimp industry in the future [3].

According to the study of the National Economic and Social Development Plan, the study of national strategies, policies, and ideas that are trying to help drive Thailand's economy back to normal after being affected by the outbreak of COVID-19, the research team,

domiciled and working in education in Nakhon Pathom, realized the importance of contributing to safety shrimp cultivators. Since shrimps are considered the main economic aquatic animal in Nakhon Pathom, it is necessary to educate farmers and enhance their ability to compete in the shrimp market by producing products that meet the needs of consumers who are aware of food safety. Additionally, this can help drive the Thai shrimp industry to flourish again.

Therefore, the researchers aimed to upgrade shrimp farmers in Nakhon Pathom province to digital entrepreneurship. As a result, they can integrate and add value to safety shrimp farming, as well as expand business networks of enterprises, communities, and cooperatives to get opportunities to access capital sources and become stronger, more self-reliant, and more acceptable.

## 2. Research Methodology

This study was a research and development. The research sequence was divided into four steps.

2.1 Step 1: Study problem conditions and needs of safety shrimp farmers in Nakhon Pathom and the development of the electronic course manual to elevate safety shrimp farmers to digital entrepreneurship. The details are as follows:

### Resources

- Studying secondary data from textbooks, academic documents, research articles, and websites to acquire concepts and theories about good aquaculture practices, entrepreneurship, digital business, human resource development, curriculum development, e-book development, networking, cooperation, and related research. Data were analyzed and synthesized for developing data collection tools.

- Studying primary data from individual sources by selecting specific key informants through purposive selection, as follows:

- 100 safety shrimp farmers in Nakhon Pathom province with the following qualifications: 1) being Vannamei white shrimp

and/or giant freshwater prawn farmers in Nakhon Pathom province with three years or more experience; 2) owning a shrimp pond with an area size of not less than 5 rai; 3) having registered as a controlled aquaculture operator with the province; 4) doing shrimp farming according to Good Agricultural Practices (GAP) for not less than 3 years; and 5) being voluntary to provide information for this research study.

- Eight experts in entrepreneurship with the following qualifications: 1) owning a successful establishment in digital business with at least two years of experience; 2) being recognized as a successful entrepreneur, e.g., by being awarded or interviewed in different media; and 3) being voluntary to provide information for this research study.

#### Data collection tools

The research team developed data collection tools based on secondary data obtained from the study. The research tools are as follows:

- A structured interview with open-ended questions for farmers to collect data on shrimp farming.

- A questionnaire for farmers to assess their qualifications for entrepreneurship.

- A structured interview with open-ended questions for qualified experts to collect information on training course development.

#### Data analysis

The researchers analyzed data obtained from questionnaires, structured interviews, and focus groups using content analysis and quantitative analysis using descriptive statistics.

2.2 Step 2: Develop a training course and electronic manual accompanying the course to upgrade safety shrimp farmers in Nakhon Pathom to digital entrepreneurship.

The researchers utilized the data collected in Step 1 to create a training course and an electronic course manual by drafting course objectives and considering their suitability according to principles and concepts as follows:

The objectives of the course were to provide students with the following knowledge and understanding: 1) digital age perspective on entrepreneurship; 2) digital entrepreneurship skills, including technology, marketing, financial and accounting, and business plan; and 3) personal traits that influence digital entrepreneurship, such as leadership and readiness for digital entrepreneurship.

The course competency refers to the ability to apply knowledge, skills, and personal characteristics to performance.

The course description defines the course name, the amount of time to attend the training, details about the training material, and course content.

The course content comprises the content consistent with course objectives, course duration, maturity of participants, and the scope of the content according to the details of digital entrepreneurship. The content was divided into four learning units: 1) smart farming technology, 2) marketing, 3) finance and accounting, and 4) business plan, with a total duration of 16 hours.

The research team designed course materials in the form of electronic lessons, e-books, and videos.

Guidelines for the evaluation of course learning outcomes were established by assessing learners before learning (pretest) and after learning (posttest). The tests comprised multiple-choice questions and were prepared with a chart or table of analysis/ indicators scoring weight. The criteria for passing the course was 60%.

Seven qualified experts, who are knowledgeable in assessment and evaluation, were asked to examine the quality of the course to ensure the appropriateness and consistency of the training content and the accompanying electronic manual. The experts are required to be 1) knowledgeable instructors in the development of assessment and evaluation in public or private institutions with at least three years of experience; 2) outstanding in the development of entrepreneurship programs, or

published research studies and development of training courses for the incubation of entrepreneurs; and 3) voluntary to provide information for this research study.

The course was piloted with 15 shrimp farmers who were not in the sample group but had similar natures and qualifications to the research sample. The aim was to examine the practical use of the developed course and electronic course manual, as well as study problems and obstacles during the trial.

2.3 Step 3: Trial the training course and electronic manual to elevate safety shrimp farmers in Nakhon Pathom to digital entrepreneurship. The details are as follows:

- Utilize the developed course and electronic manual with a sample of 30 people. The sample was selected by purposive sampling. They were qualified as follows: 1) be literate with any level of education; 2) have Thai nationality; 3) be a safety shrimp farmer in Nakhon Pathom province, located in Mueang District, Don Tum District, Kamphaeng Saen District, and Bang Len District; 4) have at least three years of shrimp farming experience; and 5) be voluntary to participate in the training course until the required learning hours have been completed.

- Prepare a place, set a date and time, prepare various documents, and start the activity to ensure the participants are aware of the necessary information. Then, the researchers measured the participants' knowledge, let them study the course and use the electronic manual, as well as assessed their knowledge after the course, and recorded information on the activities in order to summarize the results and present them in the research.

2.4 Step 4: Evaluate the training course and the electronic manual accompanying the course to elevate safety shrimp farmers in Nakhon Pathom province to digital entrepreneurship and establish business alliance networks.

- Assess the sample's satisfaction with the course and the electronic manual. Data were analyzed for feedback using descriptive

statistical analysis to improve the developed course and the electronic manual.

- Organize a focus group of 30 people to create the alliance networks (the participants were the same sample group that utilized the course and the electronic manual in Step 3) and conduct a trial with 15 people from the sample group (the same experimental group in Step 2). The research team prepared a venue and set a date and time for organizing the meeting to educate and transfer knowledge about the creation of business alliance networks. After that, the researchers summarized the results of the focus group and the opinions received.

### 3. Results of the Study

3.1 The results of the study are as follows:

According to Step 1, there were 100 informant farmers. The majority of them, 72 people, had never developed a business plan for shrimp farming, while 21 of them had done it before, and seven did not provide information. Furthermore, 73 people could develop a business plan, 16 informant farmers could not, and 11 people did not provide information. After an investigation into the essential skills that digital entrepreneurs should possess, 100 farmers agreed that the most necessary knowledge is finance and investments (93.4%), followed by marketing (73.6%), business plan writing (31.9%), digital technology (26.4%), and product processing (25.3%), respectively. In addition, data from the interview of eight experts suggested that understanding one's own business was the most crucial skill for a successful entrepreneur. Data analytics for business management, product marketing and value addition, advanced technology, finance and accounting, and business planning were also on the list. To help farmers become digital entrepreneurs, a training course should cover digital marketing, help them create a business plan that outlines their strategy and goals, teach them how to use innovation and modern technology, and explain how to define their business's objectives, as well as the creation of

unique goods and services and accounting and financial expertise. The researchers, therefore, used the above information to develop a training course and an electronic manual to upgrade safety shrimp farmers in Nakhon Pathom province to become digital entrepreneurs. The training was a short course under the name of digital entrepreneurship. The course duration was 16 hours, consisting of four units: 1) smart farming technology, 2) marketing, 3) finance and accounting, and 4) business plan, with assessment and evaluation activities and a 30-question test.

The research team reviewed the course and the accompanying electronic manual by assessing the suitability and consistency of the training course and the electronic manual with seven experts. The results showed that, overall, the qualified experts found that the training course and the electronic manual were most appropriate with an average of 4.95 and the S.D. of 0.22. When considering each component, it was found that all eight components—1) principle and background, 2) course objective, 3) course competency, 4) course description, 5) course content, 6) learning activities, 7) learning material, and 8) learning evaluation—were suitable at a high level. The top three components of appropriateness with the highest average were learning material ( $\bar{x} = 5.00$  and S.D. = 0.00), learning activities ( $\bar{x} = 4.96$  and S.D. = 0.19), and principle and background ( $\bar{x} = 4.96$  and S.D. = 0.20), respectively.

The results of the trial of the training course and the electronic course manual to elevate safety shrimp farmers in Nakhon Pathom province to digital entrepreneurship revealed that the participants who completed the 16-hour course and studied the electronic manual had higher results than before learning. The participants' average scores before and after learning were 12.13 and 25.83, respectively. Consequently, the posttest was significantly higher than the pretest with a significance level of .05.

The results of participants' satisfaction with the training course and the electronic course manual to elevate safe shrimp farmers in Nakhon Pathom province to digital entrepreneurship showed that 30 participants were most satisfied with the course and the electronic manual with an average of 4.60 and the S.D. of 0.65. When considering each component, the participants were most satisfied with the process ( $\bar{x} = 4.63$  and S.D. = 0.66), followed by course management ( $\bar{x} = 4.61$  and S.D. = 0.64), facilitator ( $\bar{x} = 4.60$  and S.D. = 0.65), results and benefits ( $\bar{x} = 4.60$  and S.D. = 0.63), assessment and evaluation ( $\bar{x} = 4.59$  and S.D. = 0.61), product ( $\bar{x} = 4.57$  and S.D. = 0.70), and import ( $\bar{x} = 4.56$  and S.D. = 0.65), respectively.

3.2. The results of the development of the electronic manual on digital entrepreneurship and business alliance networks in Nakhon Pathom province showed that the electronic manual accompanying the course to elevate safety shrimp farmers in Nakhon pathom province to digital entrepreneurship through an assessment by seven qualified experts was most suitable with learners with an average of 5.00, and S.D. of 0.00.

3.3 Regarding the results of creating business alliance networks for safety shrimp farmers to digital entrepreneurs in Nakhon Pathom obtained from conducting a focus group, the participants made useful recommendations as follows:

1. Organizing a small group meeting provided opportunities for everyone to build a good relationship, create cooperation, and work with mutual benefit. The developed course integrated technology knowledge into today's business, which was important for entrepreneurs to apply to their businesses. Idea exchange within the groups brought out expertise in each person to create new things.

2. Providing a forum for farmers to develop or solve problems in various areas of work could increase production opportunities, marketing channels, and bargaining power,

which brings cooperation to help protect the interests of all.

3. Utilizing the knowledge gained from the business plan training helped farmers make use of what is left over from production, such as processing small shrimp that are not the right size into sweet shrimp. This allows them to

adjust the plan according to what they have to maximize their financial return.

4. There should be a promotion of negotiation knowledge creation for dealing with other entrepreneurs and middlemen. This could allow farmers to do business negotiation effectively.

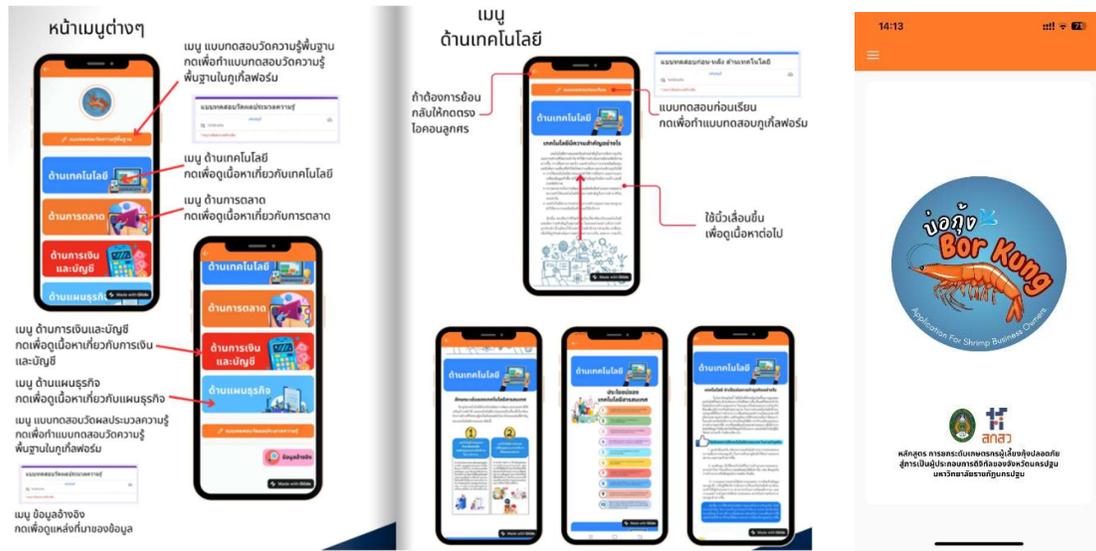


Figure 1. Electronic books and web application

4. Discussion and Conclusion

According to the study, the findings could be discussed as follows:

4.1 The primary information needed for the development of the training course and the accompanying electronic manual for upgrading safety shrimp farmers to digital entrepreneurship in Nakhon Pathom province was obtained from the informants, consisting of 100 farmers and eight successful entrepreneurs. The data were studied, analyzed, and synthesized resulting in the ability and development needed to raise farmers to digital entrepreneurship. It made possible to determine the course’s objectives and also influence the selection of content, organization of the content system, selection of learning experiences, assignment of activities, and determination of whether the evaluation was appropriate for

those who would attend the course. This was in line with Taba’s model for developing curriculum, which suggested that the curriculum development process consisted of seven stages: 1) needs analysis; 2) objective formulation; 3) content selection; 4) content organization; 5) learning experience selection; 6) organizing activities and learning experiences; and 7) evaluation (Hilda Taba, cited in Marut Patphol, 2019) [4]. This was also in accordance with the concept of Chanasith Sithsungnoen (2021, p. 155), which suggested that curriculum development was an important process in education development. There must be a plan for improvement of the study of basic data analysis, the study of the criteria, and the procedure of selecting the appropriate model. The curriculum development process was a continuous process. The important purpose was

to acquire the effective curriculum of a development model, which was a continuous and complete overview. It consisted of eight steps: Step 1 basic data analysis and collection; Step 2 determining the principles and aims of the curriculum; Step 3 choosing and organizing content and learning experiences; Step 4 determining guidelines for evaluating the achievement of learners; Step 5 checking the quality of the curriculum before applying it; Step 6 implementing the curriculum; Step 7 evaluating the curriculum; and Step 8 improving curriculum changes and curriculum development. The researchers' course development in this study was also in accordance with the concept of Marut Patphol's development (2019) [4], which proposed the results of the education, curriculum qualifications, and curriculum development of four scholars, including Ralph W. Tyler, Hilda Taba, J. Galen Saylor and William M. Alexander, and Peter F. Oliva. It was stated that the curriculum development model had a common focus on the systematicity of curriculum development. When analyzing the concept of curriculum development, it was found that various systems could be linked to each other. There were three systems, consisting of curriculum design system, curriculum implementation system, and curriculum evaluation system. The stages of curriculum development from synthesis were common: 1) basic data analysis for curriculum development; 2) curriculum design; 3) curriculum implementation; and 4) curriculum evaluation.

4.2 By examining the course and the electronic manual, the suitability and consistency of the training course and the electronic manual were evaluated by seven experts. The results showed that, overall, the course and the electronic manual were most suitable, with an average of 4.95 and S.D. of 0.22. When considering each component, it was found that all eight components—1) principle and background, 2) course objective, 3) course competency, 4) course description, 5) course

content, 6) learning activity, 7) learning material, and 8) learning evaluation—were suitable at the high level. The top three of the components, which had a high average of suitability, were: 1) the learning material with an average of 5.00 and S.D. of 0.00; 2) the learning activity with an average of 4.96 and S.D. of 0.19; and 3) the principle and background with an average of 4.96 and a S.D. of 0.20, respectively. It could be said that the systematic synthesis of information and curriculum development resulted in a complete set of key curriculum components. This was consistent with the idea of Wareerat Kaewurai (2021, p. 35) [6], which proposed that the course components should generally consist of course objectives, course content, teaching process, and assessment and evaluation guidelines. When classifying the curriculum components, there might be some differences in the details, but mainly, there would be completely the same important issues or important components that will allow the instructor to apply the curriculum effectively. Curriculum developed at different levels might have different contextual components. However, the key components must be: 1) principles; 2) aims or objectives; 3) structure, a section that discusses the subject material for learners to learn from and details the content; 4) guidelines for learning experiences; and 5) learning evaluation.

4.3 Implementation of the course with a sample of 30 people revealed that the participants in the training course studied the electronic manual accompanying the course to elevate safety shrimp farmers in Nakhon Pathom province to digital entrepreneurship for 16 hours, and their test results after attending the course were higher than before learning. When comparing the pretest and posttest scores, the posttest scores were significantly higher than before learning at the level of .05. When assessing the satisfaction of participants with the training course and the electronic manual, it was found that the participants were most satisfied with the training course and the

electronic manual with an average of 4.60 and S.D. of 0.65. This was consistent with the results of the research study by Phisit Suvarnaphaet (2560) [7], which presented the results of the research study on the Development of the Training Course on Method for Calculating Day Length for Agriculture, and the results showed that the course was very consistent and appropriate. As for the knowledge of learners after training, it was significantly higher than before the training at the .05 level, and learners were very satisfied with the training course. Therefore, it could be concluded that the training course and the course manual contributed to learners' ability to develop themselves effectively and created a high level of satisfaction with the course.

4.4 The examination of consistency and suitability of the electronic manual accompanying the course to upgrade safe shrimp farmers to digital entrepreneurs showed that it was suitable for learners at the highest level with an average of 5.00 and S.D. of 0.00. This was consistent with the concept of Jintavee Khlaisang (2012, p. 26–31). [8]. It suggested that e-books facilitate learners' learning. Learners could study at their own pace, both online and offline, through various electronic devices, allowing them to quickly access information, leading to effective learning and affecting learning achievement, as well as increasing their interest in learning and responding to the needs of learners. The outstanding feature of the e-books was that learners could study and learn anywhere. It could be opened and read through a computer or other portable electronic devices over the Internet. This was also aligned with the assessment results of satisfaction with the training course and the electronic manual accompanying the course developed in this study, which was found at the highest level with an average of 4.60 and S.D. of 0.65. Thus, it could be concluded that the course's electronic manual could facilitate learners' learning. Learners could use it anytime and anywhere, following their interests.

4.5 The research team held a focus group to connect business alliance networks for safety shrimp farmers to digital entrepreneurship in Nakhon Pathom. The results showed that the participants proposed four points of usefulness in organizing the meeting, as follows: 1) the focus group was an opportunity for everyone to build good relationships with each other, create cooperation, and work in a mutually beneficial manner. It was accepted as a course that applies technology knowledge to today's business. 2) The meeting provided farmers a place to discuss and work through problems across various fields that could expand their farming options, marketing avenues, and bargaining power. All of which encourage collaboration and the protection of everyone's interests. 3) Farmers could create new uses for their leftover produce by applying the knowledge they received from the business plan training. For example, they could turn small shrimp that did not meet the proper size into sweet shrimp. This enabled them to maximize their financial return by modifying the plan based on what they had. 4) To help farmers successfully negotiate trading, they should be encouraged to develop negotiating skills for interacting with other business owners and middlemen. The results were consistent with the concept of Surasak Nananukul (n.d.) [9], which suggested that the creation of business alliance networks encouraged cooperation between many businesses in various ways, as well as doing business together so that businesses in the network could do things that an individual could not. The business networks could do various activities together as a large business because they operated together for mutual benefit. Therefore, it had higher capabilities, higher efficiency, and higher mobility, including having a better initiative that each business could do alone. Business networks allowed small and medium-sized businesses to survive and compete with global businesses. In addition, this was in line with the concept of Preedee Nukulomprattana (2020), which proposed that collaboration was a creative

business. Networking was essential to doing business in this highly competitive era. Business networking was a great way to create value, expand your customer base, and learn more about your business. It was not only about exchanging information but also about building long-term relationships for mutual benefit. By building a strong business network, your business could grow and prosper in the future [10].

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