

# Innovation that influences the success of the development of rice products

Theeraphon Manpiriyakul<sup>1</sup>, Sudawan Somjai<sup>2</sup>, Thaniya Phongsiri<sup>3</sup>

<sup>1,2,3</sup> Graduate School, Suan Sunandha Rajabhat University, Thailand

E-mail: <sup>1</sup>s61584917008@ssru.ac.th, <sup>2</sup>sudawan.so@ssru.ac.th, <sup>3</sup>thaniya.po@ssru.ac.th

## ABSTRACT

This research is a qualitative research with the objective to synthesize manufacturing innovation and development of rice processed products. The target population is people living in Bangkok and people living in Nakhon Pathom, Chiang Mai, Udon Thani and Phang Nga provinces, with particular emphasis on agro-industrial processed groups, community enterprises, small and medium enterprises, farmer group, and personnel in the chain. The tools used in the data collection were in-depth interviews and observable interviews. The research results revealed that every person in the chain was the starting point for innovation that influenced the success of the development of rice processed products contributing to the development of processes into identity products. Besides, the creation of innovation in rice production is the development of food security.

## Keywords

Rice production innovation, processing, community enterprises, small and medium enterprises

## Introduction

Quality and safety food is one of the important factors for the wellbeing of Thai people. Apart from resulting in the effective development of potential in all areas, it also affects the trade and economy of the country. Thailand is a country with biodiversity and abundance in producing the adequate food to feed the people in the country and exports which can bring huge income to the country. From changing economic, social and cultural conditions together with the changing society in the present era from the emergence of new diseases and threats, situation of natural resource degradation, global warming, and the needs for compliance with international rules on international trade and free trade, these factors affect the situation of food security and sustainability of the country if it is unable to manage the country's food system effectively and efficiently.

Food security is a new form of security that many countries are experiencing and are creating the ways to deal with challenges for the survival of the people of the country and the world population. Especially in developing countries, this problem is becoming more and more serious. As a result of climate change, energy crisis, environmental degradation, and importance of decreased food crop production with more emphasis on energy crop production, the price of food crops increase affecting the poor people not to access food.

The world food crisis has not yet affected Thailand on the supply side at this time. Thailand does not only produce food sufficiently for domestic consumption but Thailand still creates products enough to be exported to foreign countries until Thailand becomes both the world's largest food producer and exporter. Many agricultural products that Thailand can export more than half of the total production are such as rice, cassava, canned pineapples and shrimps as the world's No. 1 exporter, sugar as the world's No. 2 exporter, and broiler as the world's No. 4 exporter, etc. From these reasons, Thailand can declare itself as the Kitchen of the World.

However, in terms of food security, what are important and should be considered at the same time are 4 important things

or 4F because they are connected to one another. Some plants can be useful for more than one thing, namely, 1. Being food, 2. Being feed for animals to be consumed by human, 3. Being fuel, and 4. Being used in the industry or factories. The important economic crops that can be used for many purposes include rice, maize, cassava, sugarcane and oil palm. For these crops, the government has a policy to support farmers to develop production by using varieties, production factors, agricultural methods, and proper use of agricultural machinery, creation of innovation in manufacturing, various processing to increase the productivity per unit of the areas and solving the problems of higher labor costs (Apichart Pongsrihadulchai et al, 2013).

Thai society is based on agriculture. Most people grows rice since the ancient time. As rice is both the main food crop and the major economic crop, it is of close importance to Thai people. Rice and products related to rice are fundamental factors determining economic, social, and cultural features of Thai people. This fundamental relation reflects the changes in rice production and consumption at various levels. Personally, it represents attitudes, emotion, thoughts, values, and personal behaviors towards rice. At the group level, rice consumption patterns, behaviors, and rice farming patterns. At the social level, it represents the changes in community and social identity in rice farming (Iam Thongdee, 1995: 2).

According to the data of Institute of Intellectual Property of Chulalongkorn University, it was found that for the trend of the global food industry in 2017, the consumers would popularly like health food in specific forms more such as less processed, cut down on meat protein. They would consume more plant protein, reduce dietary fat, pay more attention to the environment, reduce waste in food production, and leftovers from food consumption. Moreover, consumers of all ages have begun to focus on healthy food in order to reduce future health expenditures. Modern food needs beautiful packaging. The packages are convenient to use and have smaller sizes suitable for eating for just one single meal. In terms of distribution channels,

the consumers pay more attention to online information. They are also more interested in ordering products online.

The tendency of industrial state at the national level from the Thailand 4.0 policy emphasizes the development of the Processed Food Industry by applying advanced technology in food production processes and food technology including food safety traceability, research and production of healthy nutrition, and processed food products using alternative protein.

“Rice” is one of the world’s most wonderful plants that can describe the harmonious relationship between nature and human in many ways to express the beliefs, respect and faith. This is the cultural relationship in using rice for consumption and trade as economic relationship. Rice is used as a tool in launching a campaign to help farmers as a political relationship, etc. At present, science and technology play a role in the process of rice from the production, processing and trade which are increasing causing the relationship of rice in different contexts to change.

Apart from being the main food for Thai people, “rice” is also processed into various food or products according to the folk wisdom that has been accumulated from generation to generation. This is a step towards bringing science, technology and innovation to develop in rice production and rice processing until approaching the new innovations from rice products.

However, for the world rice production, consumption, import-export situation in 2017, the Organization for Economic Co-operation and Development (OECD) and Food and Agriculture Organization (FAO) had studied and published the research titled OECD-FAO Agriculture Outlook 2017-2026. In the mentioned report, the views and projections were shown on the overall rice production and trade situation during the year 2018-2026. The information from the report was as shown in Table 1.1. It was stated that the world rice production and trade situation during the year 2018-2026 tended to increase. The amount of rice production in the world has increased from 466.83 million tons and rice production will tend to increase steadily. The Organization for Economic Cooperation and Development has forecast that in 2026, the world’s rice production volume will reach 560.92 million tons corresponding to three factors; 1. The use of cultivated area of the world and productivity per area is likely to increase continuously in line with the world’s rice production. In 2017, the amount of the world’s rice cultivation and the yield per area was 163.78 million hectares and 3.09 tons / hectare, respectively (1 hectare equals to approximately 6 rai 1 ngan) which increased from 2010 by 1.29% and 6.92%, respectively. Both factors reflect the efficiency of the world’s rice cultivation which tends to increase as well. 2. The world consumption of rice tends to increase in line with the world production of rice. The world consumption of rice is growing each year accounted for 0.5-1.8 percent. In 2017, the world’s consumption of rice was 507.6 million tons. Furthermore, when considering the consumption of rice in 2026, it is found that the amount is 560.14 million tons which increased from the consumption of 2010 for 22.01 percent. 3. The world's import and export volume of rice in 2017 was 42.25 million tons and 42.68 million tons, respectively. The amount increased from the year 2010 to

10.07 million tons and 8.52 million tons, respectively. The world’s rice imports and exports during the year 2010-2017 have the average annual growth rate at approximately 4.3 percent and 3.49 percent, respectively. The average growth rate of world rice imports is slightly higher than the average growth rate of global rice exports. However, from 2018 onwards, the world rice trade balance has been stable while the volume of world’s imports and exports of rice tends to continue to increase. This is correspondent with the world production and consumption of rice. This shows that rice is an important crop and agricultural product and tends to be in demand increasingly even more in the future as well.

## Research objectives

1. To study the level of success in the development of rice processed products.
2. To study the innovation influencing the success in the development of rice processed products.

## Research methodology

### Population and sample group

Regarding the quantitative research, the population used in this study includes people living in Bangkok and people living in Nakhon Pathom, Chiang Mai, Udon Thani and Phang Nga provinces, with particular emphasis on agro-industrial processed groups, community enterprises, small and medium enterprises, farmer group, and personnel in the chain for 55,000 persons covering a wide range of industrial agricultural products such as rice, rice processing innovation. In determining the sample groups, the computational method was used based on the minimum criteria set by the Semi-Structural Model Analysis (SEM) technique defined to be more than 200 samples or with the criteria determined from 20 times the observed variables. In this research, 15 observable variables equaled to 300 samples which were in accordance with Kyle’s criteria (Kline, 2005). The multiple sampling method was used from the province, district, municipality and community, respectively.

Regarding the qualitative research, the population groups used in this study were 1. 30 rice processing operators and 30 people in Bangkok, Nakhon Pathom, Chiang Mai, Udon Thani and Phang Nga.

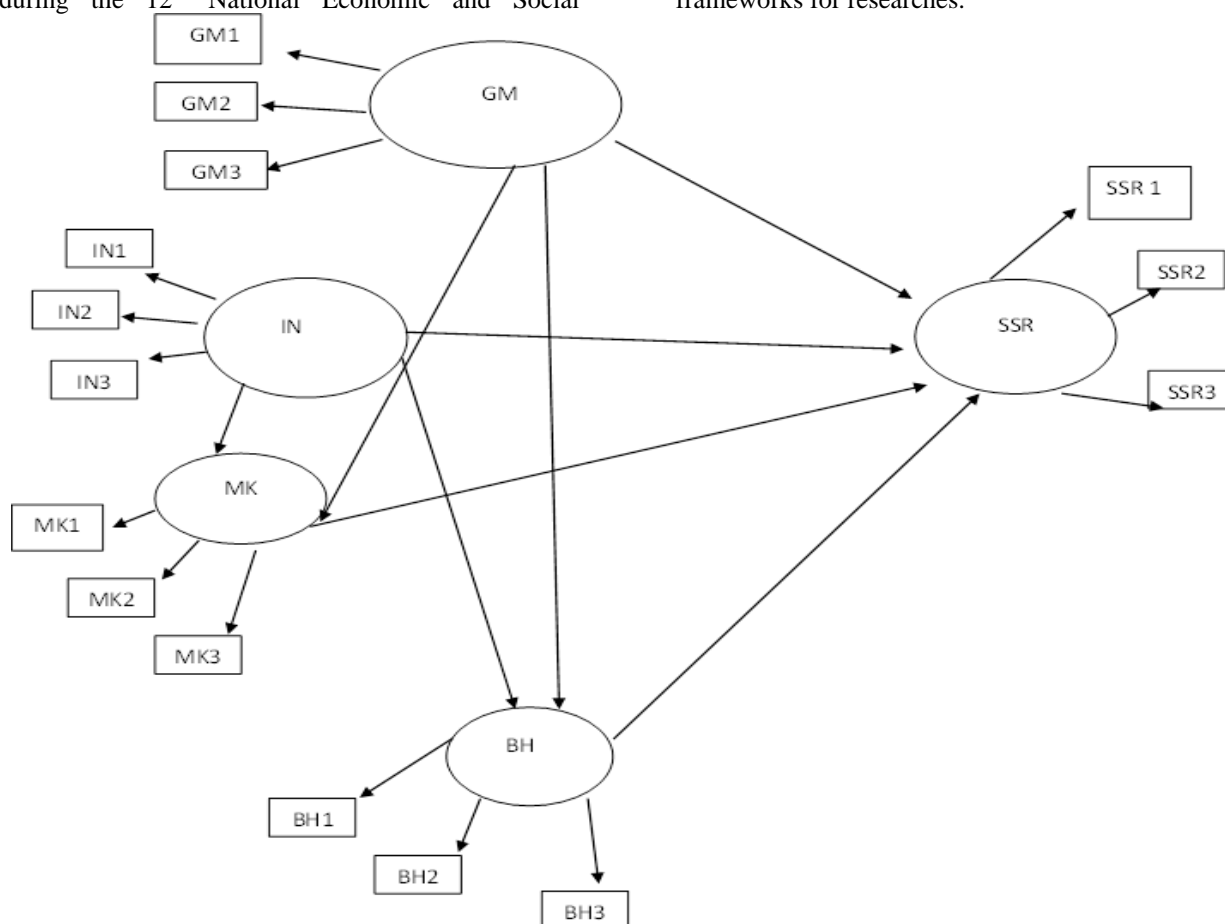
The research tools used for the quantitative research were questionnaires used for data collection. The research tools used for the qualitative research were the interviews and observations used for data collection.

## Research conceptual framework

The objectives of this research are to study the level of success in the development of rice processed products and to study the innovation influencing the success in the development of rice processed products. The researchers reviewed related literatures; 1. Concepts and theories of management, 2. Concepts and theories of administrative development, 3. Concepts and theories of innovation, 4. Concepts and theories of participation, 5. Policy of

government sector on food security, 6. National Food Commission Act B.E.2551, 7. Agricultural Development Plan during the 12<sup>th</sup> National Economic and Social

Development Plan (2017-2021), 8. Other related literatures, 9. Synthesis of research variables, and 10. Conceptual frameworks for researches.



**Figure 1** Research conceptual framework

## Research results

The research results revealed that the beginning of innovation creation is the consumer. The processing of rice products is the transformation of consumer demand into a unique product divided into a value-added process which is a way to create innovation to meet the psychological needs of consumers. The value-added process is a process to increase the value of rice by creating innovations in the production and processing of rice products. The creation of rice production innovation is to develop food security. It can increase the potential of international trade and be a guideline for promoting sustainable rice processed products.

## References

- [1] Apichart Pongsrihadulchai et al. (2013). Food security and Thai energy. Bangkok: International Institute for Trade and Development. Iam Thongdee. (1995). Rice, culture and change. Bangkok: Matichon.