

# STRATEGIES FOR VALUE ADDED CREATION IN THAI RICE INDUSTRY

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## ABSTRACT

**Aim:** *This research aims to develop structural equation model of strategies for value added creation in Thai rice industry.*

**Methodology:** *The mixed research methods were used. The qualitative research was conducted with the in-depth interview techniques to find factors to develop into a model. The next sequence was the quantitative research collecting data from a sample of 500 people who were entrepreneurs in Thai rice industry to develop and analyze the model. Lastly, the qualitative research was conducted with group discussion techniques to verify the validity of the model.*

**Finding:** *The results provided new bodies of knowledge that rice entrepreneurs were able to apply them to enhance for value added creation in Thai rice industry to increase of sustainable competitive efficiency in global market. The developed model consisted of 4 main elements which were crucial for strategies for value added creation in Thai rice industry and prioritized as follows: resources, market orientation, innovativeness, and knowledge management.*

*The results of the hypothesis testing it was found that (1) Market orientation has directly influenced both the innovativeness and the knowledge management significantly at the .001 level (2) Knowledge management has directly influenced the resources significantly at the .001 level. (3) Resources has directly influenced the innovativeness significantly at the .001 level.*

**Conclusion:** *The results of the simulation analysis revealed that to be consistent with the empirical data as follow 0.078 of Chi-Square probability, 1.160 of Relative Chi-Square (CMIN/DF), 0.962 of Goodness of Fit (GFI), and 0.018 of Root Mean Square Error of Approximation (RMSEA). Different sizes of businesses differently played important roles to the elements.*

**Keywords:** Strategies, Value Added Creation, Thai Rice Industry, Structural Equation Model.

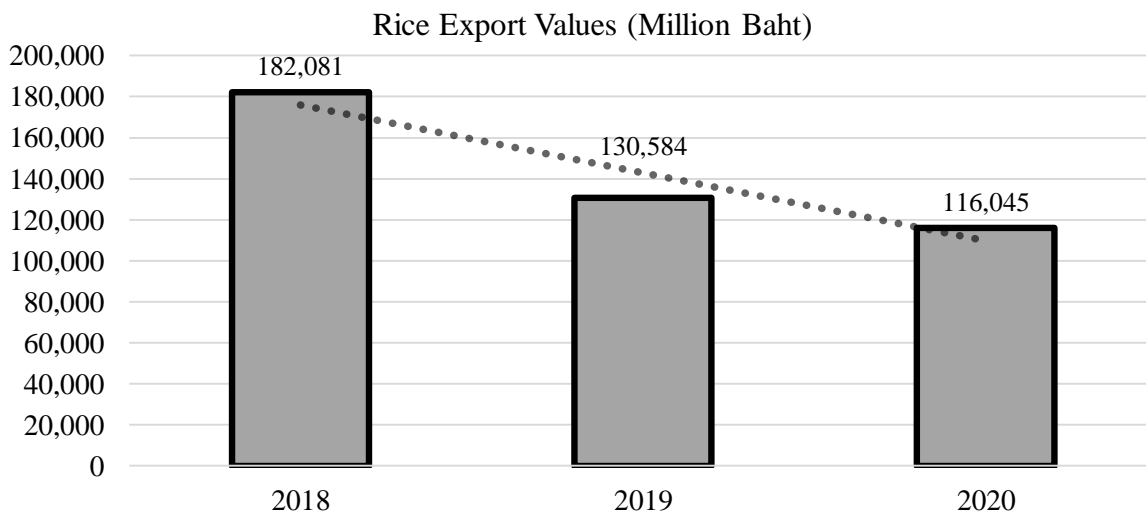
## INTRODUCTION

Rice has been considered as economic crops playing a vital role for Thailand for ages as it is a resource which can feed a lot of population both in Thailand and many countries worldwide. It can be noticed that Thai rice export quantity in the global market in 2019 hit the world's rank record. India's total rice export value was 7,112 million U.S. dollars while

Thailand's was 4,206 which were 32.50% and 19.20% of world' rice export value, respectively. Thailand was able to have high rice export value just after India (World's Top Exports, 2020).

According to the aforementioned roles, the government therefore concretely and progressively determined strategic plan to develop Thai rice as it could be seen that the Office of the National Economic and Social Development Council has filled guidelines of Thai rice development during the past several years. In addition, The Tenth, Eleventh, and Twelfth National Economic and Social Development Plan have specified strategies to study and research opportunities and possibilities for value addition and productivity of agricultural products (Office of the National Economic and Social Development Council, 2017).

However, it can be noticed that the situation of rice export has poorly tended when the figures of rice export value during the past several years have declined. Thai rice export values during 2018 – 2020 were 182,081 130,584 and 116,045 million Baht, respectively (Office of Agricultural Economics, 2021) as shown in Figure 1.



Note: Office of Agricultural Economics, 2021

**FIGURE 1**  
**RICE EXPORT VALUES DURING 2018 – 2020**

According to Figure 2, the statistical figures clearly showed that rice export of Thailand tended to decline in the future as it can be seen that in 2018, the export value was 182,081 million Baht while the following year and the year after, the values declined to 130,584 and 116,045 million Baht, respectively which were considered 36.26% decrease of the value in 2018 (Office of Agricultural Economics, 2021)

In this research, the researcher aimed to study the use of strategies for value added creation in Thai rice industry by using the mixed research methods to obtain an approach that could be applied in solving the export problems. The statistics in Figure 1 showed that Thailand still encounters export problems in the Thai rice industry that tends to decline until now. Although there are already efforts to promote, from seeing the statistics that tend to shrink, the sustainable competitiveness is less. Therefore, this is the question and objective of this research to develop a structural equation model for value added creation in Thai rice industry to increase

of sustainable competitive efficiency in global market and reducing impact of declining trend of Thai rice exportation. According to during this period, several well-known scholars from a variety of countries have contributed investigated the existing body of knowledge in this field for distributing the research and expanding the human understanding of organizational science (Salamzadeh, 2020).

According to objectives, theoretical review, academic documents, and qualitative research by using in-depth interview technique to find significant factors of strategies for value added creation in Thai rice industry to increase of sustainable competitive efficiency in global market and reducing impact of declining trend of Thai rice exportation. There are 4 components of the significant factors as follows: 1) Market orientation. 2) Knowledge Management. 3) Innovativeness. 4) Resources.

### **Market Orientation**

Hunt & Morgan (1995) defined that market orientation is to systematically collect data from customers and rivals. Such data are then analyzed, developed, and enhanced to be guidelines of organizational strategic planning. Narver & Slater (1990) expressed that market orientation is organizational culture emphasizing on organization's continuously superior value building for customers. The efficient and effective organizational culture will encourage staffs to have behaviors that can create superior values to customers. The culture of market orientation is what the organization should apply to have competitive advantage (Slater & Narver, 1998).

### **Knowledge Management**

Gavin (1993) defined that knowledge management is modification and improvement of behavior in the organization by Creation, Acquisition, and Transfer of knowledge leading to acknowledgment and new ideas. This is in correspondence with Marquardt (2003) who proposed knowledge management process consisting of 1) Knowledge Acquisition, 2) Knowledge Creation, 3) Knowledge Storage and Retrieval, 4) Knowledge Transfer and Utilization. Schumpeter (1996) suggested that creativity of new ideas will destroy the ones in the organization and seems to be the beginning of innovative process which causes added values in business organizations.

### **Innovativeness**

Guan & Ma (2003) said that innovativeness is the ability to discover, develop, and improve for uniqueness including value addition which leads to economic benefits and achieve innovative effectiveness. Zhou & Li (2010) explained that multidimensional innovativeness is innovative support strategies; organizational behavior, work procedures, products, and new market acquisition or in term of vision and innovative support strategies; capability and resources for creativity management, organizational structure and system, work atmosphere, and organizational culture. If in term of input and output, it could be explained that innovativeness was the input and innovation was the output (Manu, 1992).

## Resources

Wernerfelt (1984) stated that resources are everything possessed by the organization and can be divided into 2 types: 1) Tangible Resource like personnel, money, raw materials, and machines and 2) Intangible Resource like image and fame, brand reliability, and management ability. Resources should be valuable for the organization. Barney (2001) said that valuable, unapproachable, irreplaceable, and inimitable resources are considered as strategic resources which make the organization sustainably maintain competitive advantage because resources are both tangible and intangible and specified to be creative asset of the organization for business sake.

## Objectives

To develop structural equation model of strategies for value added creation in Thai rice industry.

## Hypotheses

*H<sub>1</sub> Market orientation component has a direct influence on innovativeness component.*

Organizational ability for customer's data analysis causes better effective organizational production innovation and work performance (Nguyen & Harrison, 2019). Likewise, the study of Fidel et al. (2018) revealed that customer's knowledge management and focus are vital strategies then effecting on encouragement of innovative capability and pushing up successful marketing results of small and medium businesses. This is in accordance with the study of Dankaew & Silpcharu (2020) who studied on "guidelines for business advantage management for export of Thai industrial products". It was found that marketing directly effects on innovation.

*H<sub>2</sub> Market orientation component has a direct influence on knowledge management component.*

Customer's information, allowing customers to participate, and developing integratedly as a team, the organization concretely encourages the development of knowledge about customers; manufacturers who apply with radical innovation (Johansson et al., 2019). Customer's engagement allows personnel to absorb knowledge within the organization and have ideas to change such knowledge to be more suitably used in the organization (Storey & Larbig, 2018).

*H<sub>3</sub> Knowledge management component has a direct influence on resources component.*

Driving force of strategic alliance consists of knowledge, learning, performance, and motivation of the market. These encourage the development of human resource management in small and medium enterprises who use technology as their basic needs for production (Ferreira & Franco, 2019). This is in accordance with the study of Cooper et al. (2016) who stated that knowledge management leads to organizational learning culture and helps develop human resource. Moreover, knowledge management also indirectly effects on human resource and performance of the organization via the learning culture (Ibidunni et al., 2017). Conclusion that

knowledge management have been discussed from perspectives that direct organizational managers' attention to position it as a strategic resource to the firm.

*H<sub>4</sub> Resources component has a direct influence on innovativeness component.*

Organizational resources consisting of its capabilities; body of knowledge, technology, and management are important to strengthen the organization to become the organization of technology and advanced innovation (Camisón-Haba et al., 2019). Likewise, the study of Singh & Kota (2017) found that family business having good resource basis effects on innovativeness more than the non-family ones. Tajpour et al. (2018). Conclusion that using the human resource and technology potential to achieve the organization goal with the dependent variable is positive and significant at the 0.05 level.

*H<sub>5</sub> Importance levels of strategies for value added creation in Thai rice industry as a whole separated by business sizes are different*

Teerasak (2017) revealed the relationship between organization size and adoption of technological innovations that affect the creation of added value in business in studying of management technology, design technology and production technology on organization size and adoption of technology innovations in Thailand. The results showed that large organizations are more likely to adopt all three technologies than small and medium enterprises, respectively. The findings more clearly explain the relationship between organization size and innovation in the organization. This will be useful for formulating corporate technology and innovation management strategies to create added value for the organization.

## METHODOLOGY

This study was designed as an inductive research with mixed methodology. Qualitative Research was carried out by using In-depth Interview technique with 9 experts: 3 experts in Thai rice industry entrepreneurs, 3 experts in Thai rice industry from government departments and 3 independent scholars in business management academic. The interview was structured from as opened-end questions, following to the concept of four latent variables which had been reviewed from theory and literature. The four latent variables comprised of 1) Market Orientation 2) Knowledge Management 3) Innovativeness and 4) Resources. These variables were evaluated for the index of the corresponding with objective or content using Item Objective Congruence; IOC analysis showed values in the range of 0.60-1.00 (accepted at >0.5). Finally, we obtained the suitable 100 variables according to the 4 latent for try-out questionnaire which was evaluated for the reliability from Cronbach's Alpha statistic and at 0.98 (accepted at >0.8), discrimination of both check-list and rating-scale question items (accepted at >0.3) using Standard Deviation (S.D.) analysis were 0.41–1.63, and Corrected Item-Total Correlation analysis was 0.32–0.83, respectively.

Quantitative research: Population of this research is Thai rice industry entrepreneurs which were classified into small industrial business with not more than 50 employees and medium industrial business with more than 50 but not over than 200 employees. Sample size determination was carried out by using criteria of component analysis research. 500 samples were determined in very good level (Tanin, 2020). Multi-stage sampling was used and consisted

of cluster sampling, quota sampling and probability sampling using simple random sampling, respectively. Multivariate Statistical Analysis employed Structural Equations Model (SEM) by AMOS with evaluating the Data-model Fit in 4 levels including (1) Chi-square Probability Level which was over 0.05, (2) Relative Chi-square which was less than 2, (3) Goodness of fit Index which was over 0.90, and (4) Root Mean Square Error of Approximation which was less than 0.08.

The model of strategies for value added creation in Thai rice industry in order to determine the strategies was approved by 11 experts using focus-group analysis techniques in qualitative research.

## RESULTS

The results of this research in strategies for value added creation in Thai rice industry was further discussed as follows:

Strategies for value added creation in Thai rice industry	$\bar{x}$	S.D.	Significant level
Overall	4.30	0.60	High
1. Market orientation	4.36	0.62	High
2. Knowledge management	4.11	0.60	High
3. Innovativeness	4.36	0.65	High
4. Resources	4.37	0.54	High

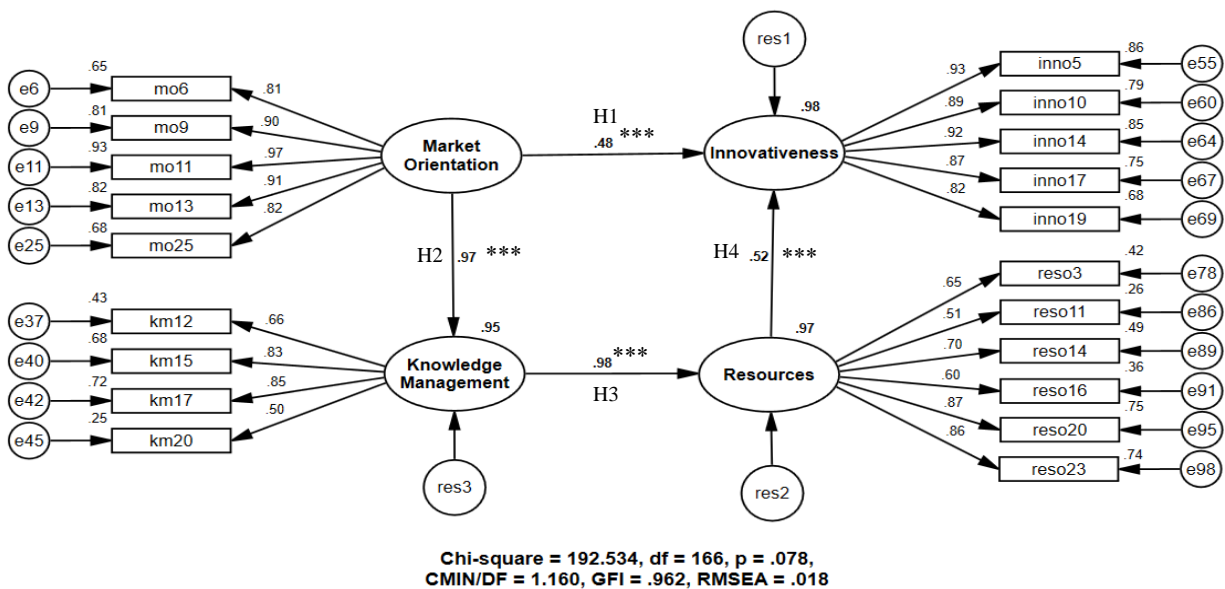
It was found that overall factors in strategies for value added creation in Thai rice industry is showing high importance by mean values at 4.30. When considering in each aspect of factor, the importance in each factor; resources, market orientation, innovativeness, and knowledge management gave high importance by mean values at 4.37, 4.36, 4.36 and 4.11, respectively in according with Table 1.

Strategies for value added creation in Thai rice industry	Small Business			Medium Business		
	$\bar{x}$	S.D.	Significant level	$\bar{x}$	S.D.	Significant level
Overall	4.25	0.53	High	4.35	0.44	High
1. Market orientation	4.36	0.68	High	4.37	0.57	High
2. Knowledge management	3.92	0.62	High	4.31	0.51	High
3. Innovativeness	4.36	0.69	High	4.36	0.62	High
4. Resources	4.36	0.57	High	4.38	0.50	High

It was found that overall significance of small businesses was high importance by mean values at 4.25. The significance of resources, market orientation, innovativeness and knowledge management was high importance by mean values at 4.36, 4.36, 4.36 and 3.92, respectively in according with Table 2.

For medium businesses, overall significance was found in high importance by mean values at 4.35. The significance of resources, market orientation, innovativeness and knowledge management was high importance by mean values at 4.38, 4.37, 4.36, and 4.31, respectively in according with Table 2.

For the results of analysis of the developed structural equation model, the researchers improved the structural equation model by considering Modification Indices (MI) as recommended by Arbuckle (2012) to rule out some improper observational variables until the structural equation model was obtained with statistical values that passed all 4 criteria. The analysis of the developed structural equation model passed the criteria for evaluating consistency and empirical data with a Chi-square Probability Level of 0.078, Relative Chi-square of 1.160, Goodness of Fit Index of 0.962 and Root Mean Square Error of Approximation of 0.018. The data as shown in Figure 2.



**FIGURE 2**  
**STRUCTURAL EQUATION MODEL OF STRATEGIES FOR VALUE ADDED CREATION IN THAI RICE INDUSTRY IN STANDARDIZED ESTIMATE MODE**

Hypothesis test results to analyze causal influence between latent variables in the structural equation model of strategies for value added creation in Thai rice industry consist of 4 points as shown below:

- H<sub>1</sub>* Market orientation had a direct influence on innovativeness with statistical significance level of 0.001; factor loading was 0.48, compliant with the determined hypothesis.
- H<sub>2</sub>* Market orientation had a direct influence on knowledge management component with statistical significance level of 0.001, factor loading was 0.97, compliant with the determined hypothesis.
- H<sub>3</sub>* Knowledge management had a direct influence on resources component with statistical significance level of 0.001, factor loading was 0.98, complaint with the determined hypothesis.

*H<sub>4</sub>* Resources had a direct influence on innovativeness component with statistical significance level of 0.001, factor loading was 0.52, complaint with the determined hypothesis, as seen in Table 3.

According to Table 3, market orientation directly effects on innovativeness and knowledge management with 0.48 and 0.97 of Standardized Regression Weight, respectively while the other values were the same; statistical significance at the level of 0.001, 0.98 and 0.95 of R<sup>2</sup>, and 0.01 of variance.

Knowledge management directly effects on resources with 0.98 of Standardized Regression Weight, statistical significance at the level of 0.001, 0.97 of R<sup>2</sup>, and 0.01 of variance.

Resources directly effects on innovativeness with 0.52 of Standardized Regression Weight, statistical significance at the level of 0.001, 0.98 of R<sup>2</sup>, and 0.01 of variance.

Variables	Estimate		R <sup>2</sup>	Variance	C.R.	P
	Standardized	Unstandardized				
<b>Market Orientation</b>				0.39		
Innovativeness	0.48	0.52	0.98	0.01	5.33	***
Knowledge Management	0.97	0.76	0.95	0.01	15.86	***
<b>Knowledge Management</b>			0.95	0.01		
Resources	0.98	0.93	0.97	0.01	13.23	***
<b>Resources</b>			0.97			
Innovativeness	0.52	0.76	0.98	0.01	5.49	***
<b>Market Orientation</b>				0.39		
mo6	0.81	1.00	0.65	0.21		
mo9	0.90	1.05	0.81	0.10	25.00	***
mo11	0.97	1.14	0.93	0.04	28.12	***
mo13	0.91	1.10	0.82	0.10	25.34	***
mo25	0.82	1.03	0.68	0.20	21.81	***
<b>Knowledge Management</b>			0.95	0.01		
km12	0.66	1.00	0.43	0.31		
km15	0.83	1.24	0.68	0.17	16.45	***
km17	0.85	1.35	0.72	0.17	16.77	***
km20	0.50	0.76	0.25	0.41	10.51	***
<b>Innovativeness</b>			0.98	0.01		
inno5	0.93	1.00	0.86	0.07		
inno10	0.89	0.96	0.79	0.11	33.53	***
inno14	0.92	0.99	0.85	0.08	38.05	***
inno17	0.87	0.99	0.75	0.14	31.40	***
inno19	0.82	0.91	0.68	0.18	27.63	***
<b>Resources</b>			0.97	0.01		
reso3	0.65	1.00	0.42	0.29		
reso11	0.51	0.85	0.26	0.44	10.59	***
reso14	0.70	1.10	0.49	0.27	14.04	***
reso16	0.60	0.93	0.36	0.32	12.36	***
reso20	0.87	1.36	0.75	0.13	16.68	***
reso23	0.86	1.36	0.74	0.14	16.59	***

Noted: \*\*\* Significant level at 0.001



## DISCUSSION

The discovered from research findings on the approach in used of strategies for value added creation in Thai rice industry to increase of sustainable competitive efficiency in global market and reducing impact of declining trend of Thai rice exportation. According to the research results, 3 to be discussed topics referred from relating research documents were presented below.

1. According to the hypothesis-tested results, it was found that the element having the highest direct effects also having the highest total effect which is knowledge management. It is directly and totally effects on resources. This is in accordance with the study of Ferreira & Franco (2019) who found that driving force of strategic alliance consisted of knowledge, learning, performance and motivation of the market which highly effected on human resource development among small and medium enterprises who have technology basis. This is also in accordance with the study of Cooper et al. (2016) who stated that knowledge management significantly had positive relation to learning culture of the organization and human resource. Moreover, knowledge management also indirectly effects on human resource and organizational performance via learning culture. Then total effect of market orientation and innovativeness come after. This is corresponding to the research of Wetpanich et al. (2021) who examined on organization management guidelines in the chemical industry to deal with a changing environment in the digital economy and found that the marketing factor directly influenced the innovation and technology factor.
2. According to an analysis overall comparison of the elements of strategies for value added creation in Thai rice industry focusing on small and medium business, it was found that they were different at .05 level of statistical significance due to the fact that the medium and large businesses with good management, progressive managerial strategies on quality improvement, learning, systematic revision are able to continuously create body of knowledge and good practical guidelines in the organization for sustainability (Meza–Ruiz et al., 2017). They are different from the small ones who have incremental quality management. This is in accordance with the research of Tickle et al. (2016) who found that size of business effected on organizational excellence state. Study results showed that the organization who has high readiness of management will be more efficient that the ones whose are low. The former ones tend to use better and more efficient tool and equipment.
3. According to an analysis of significant level of variables which were sub elements of each aspect showed the highest average score lists as follows:
  - a. Market orientation: Collection of customer's demand information. This is in accordance with the study of Min & Mentzer (2000) who proposed the concept of market orientation by saying that market orientation is business philosophy, organizational culture, and organizational behavior and consists of collection of marketing data, customers, rivals, and market conditions. This is also corresponding to the study of Roopsing & Suk-kavessako (2020) who found that the most important factor for guidelines for garment industry management for sustainability focusing on marketing management was surveying consumer's demand to use the collected data in product design.
  - b. Knowledge management: Enhancement and development of research body of knowledge for product presented to customers. This is in accordance with the study of Andreeva & Kianto (2011) who stated that capability management to create internal culture on values and knowledge acquisition and suitable application with work process and plan well effect on operations of the organization.
  - c. Innovativeness: Organizational research team mutually discovered new technology to modify rice breed that met target consumer's requirement and shared knowledge with educational institutes to find methods of adding nutritional values to rice products. This is in accordance with the study of Su & Ming (2008) who mentioned that innovation management of the organization depends on learning which determines the organizational innovation from the ability of learning management and effects on its creation. In addition, choosing proper manufacturing technology to the industry can obtain competitive advantage which will benefit to the business.
  - d. Resources: Encouragement for every personnel's engagement in operations to achieve organizational goals. This research result is in accordance with Gillespie & Hennessy (2010) who stated that human resource is one of important factors that might bring business to success or failure. This is also

corresponding to the study of Armstrong et al. (2009) who proposed that part of having successful or failed businesses is workforce performance as in the organization, people are from different sources to work together, the executives therefore must be able to apply their knowledge and techniques for human management.

## CONCLUSION

The developed structural equation model consisted of 4 main elements which were crucial for strategies for value added creation in Thai rice industry and prioritized as follows: resources, market orientation, innovativeness, and knowledge management. Study results of level of significance of the 4 elements showed that every aspect was in high level of significant. Comparative results of level of significance of strategies for value added creation in Thai rice industry classified by size of business showed that medium business focused on strategies for value added creation in Thai rice industry more than the small business.

The key issue from research findings on of strategies for value added creation in Thai rice industry are to increase of sustainable competitive efficiency were that Thai rice entrepreneurs wanted to application of strategies for value added creation to enhance sustainable competitiveness efficiency in global market and reducing impact of declining trend of Thai rice exportation. The entrepreneur's approach should be prioritized to start from the market orientation aspect because market orientation was an important factor in value added creation. It also resulted in the increase of sustainable competitive efficiency in other areas of value added creation elements.

Thai rice entrepreneurs must be creating unique products with different brands, images, and quality from their rival as rice industry is highly competitive. As it is now the era of news and information, consumers can compare products quickly. If the entrepreneurs focus on price competition, they will not be able to compete sustainably. However, if the entrepreneurs want to have advantages over their rivals in the market, they must be able to create innovative products that are different from them to deliver superior values to consumers.

## Suggestion for Further Study

The author expects further study on success strategies of Thai rice industry using smart technology to enhance the standards of manufacturing process, accordingly.

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