

The Increasing Potential Competition and Innovation Management of Agricultural Products, Mangoes for Export

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Abstract

This research aimed to 1) to study the influence of increasing potential competition that affect the Innovation management of the Agricultural products mangoes. 2) to study the influence of value-added that affect the Innovation management of the Agricultural products mangoes. 3) to study the influence of innovation management that affect the performance of farmers.

The sample used in this research is mango farmers. Chachoengsao Province, 280 cases by using the Mixed Method. Quantitative research using questionnaires. And qualitative research using the phenomenological interview method. The statistics used to analyze the data are statistics, percentages, averages, and standard deviations and the statistic to test an assumption is confirmatory factor analysis second order. The results of hypothesis testing showed that 1) increasing potential competition has a positive direct influence on innovation management 2) value added has a positive direct influence on innovation management 3) innovation management has a positive direct influence on the performance of farmers.

The results of the model analysis showed that the model base on assumption were in harmony with the empirical data the chi-square was 55.08, the level of significance (p-value) was 0.19, the relative chi-square was 1.17, CFI was 1.00, GFI was 0.97, AGFI was 0.94, and RMSEA 0.03. The benefit from this research can explain the casual relationship and effect of The Innovation management of agricultural products mangoes. In addition, the research result can be used to manage for guideline of capability innovation management for the organization of agricultural products mangoes for export and lead to good results.

Keywords: *Increasing potential competition, Value-added, Innovation management, Performance of farmers*

Introduction

At present, Thailand is experiencing a slow and low level of economic growth. This is due to the high dependence on foreign countries in terms of trade, investment and technology, thus causing the global economic volatility. In addition, the direction for enhancing the country's competitiveness for stepping away from middle-income countries to high-income countries is not possible to use the conventional methods of mass production with low-cost labor but it must be adjusted to upgrade the production of products and services that focus on capital, technology and innovation and more human capital. Therefore, the country needs to have higher investments in innovation and human capital; to create value for products and services from the source to the destination, to accommodate a variety of needs both general and specific individuals and organizations, covering economic, social and environmental dimensions as well as supporting domestic and international demand as part of the global value chain. Therefore, Thailand needs to raise the country to a higher level of manufacturing and services [1] and part of the sector's drive is agricultural entrepreneurs that produces mango for export as a small entrepreneur in Thailand.

Thailand is the third largest mango producer in the world, about 2.6 million tons, No. 3, the output per rai is only 1.01 metric tons per rai which while other countries yields up to 1.97 - 1.35 metric tons per rai. The main production area of Thailand is Chachoengsao Province. It is part of the drive that generates income for farmers and generates income for the country. In addition, Chachoengsao Province is in the Eastern Economic Corridor (EEC) to upgrade the area to be Asia's leading economic zone. Develop infrastructure to support regional connections urban development and environment Implementation is necessary to build knowledge and develop personnel at all levels that are essential to support. Including raising the community level, start-up enterprises, small and medium enterprises and highly educated manpower, there is a need for a development plan to increase potential from the beginning of raw material manufacturer, develop raw materials for processing, add value and destination, and develop people to businesses and industries of the future. To be linked in the source, middle, and destination value chain according to the integrated civil state approach and the needs of entrepreneurs. Under the concept of sustainable development including the potential of the area to build the competitiveness of the country [1].

From the Chachoengsao Province Development Plan Year 2015 to 2018, set a vision to set the direction of development, which is "the center of the Burapha Pathways towards the ASEAN Economic Community Outstanding industrial and commercial base excellent

agricultural products eco-tourism meets standards, happy society” and its goal is the economy to expand steadily. The potential and competitiveness ready to enter ASEAN countries and a good environment, a happy society, comprising 5 important strategies which in the issue of strategy 2 "Increase efficiency and raise the limit the competitiveness of the safe agriculture sector” is a strategic issue that uses economic statistics in conjunction with environmental statistics by setting the strategic goal of "quality and standardized agricultural products", there are many groups of mango production for export. But there are few groups that have the potential and control the quality of production efficiently [2]. Chachoengsao Province is one of the areas where mango farmers are facing problems, namely the potential and quality control of production to be efficient. From the analysis of the export proportion and the export value of the product. Mango is likely to be Thailand's mango products from a global market perspective be in the process of product development and enhancing the quality of Thai mangoes [2].

From the reasons mentioned above, the researcher therefore realizes the importance of studies on competitiveness enhancement, value added and innovative management capability of mango agricultural products for export. The problem of this research is the potential and quality control in production in the area of restructuring the production of mango quality standard. Problems of creating value-added was created by transforming it into new products to diversify and develop fresh and frozen packaging and increase exports in the original market and expand exports in new markets. Therefore, there should be encouragement for mango farmers in Chachoengsao Province to participate in the development and upgrading of production technology potential in increasing the quantity and quality of production, processing within the community, farmers groups or as raw materials into industrial plants in processing and promote marketing in product exports. This is one of the most important economic crops in Thailand to increase export value to be sustainable and able to compete with other countries.

Research Objectives

The objectives of this research article were

1. To study the influence of competitive potential on the ability to manage innovation of mango agricultural products.
2. To study the influence of value-added creation on the innovative management capability of mango agricultural products.
3. To study the influence of innovation management ability on the performance of farmers of mango agricultural products.

Research Related Literatures

Researchers have studied theories and collected documents and related research as follows:

Increasing potential competition

Competitiveness analysis is based on the Thailand Competitiveness Matrix (TCM) concept and analysis of global demand trends. Come to group the service business out according to the attractiveness, competitiveness and trends in demand and growth rates which can be divided into 4 groups: 1) group with high potential It is a group with relatively high potential compared to other service businesses, both in terms of the potential and the potential. The competition in the region is tourism business and wholesale-retail business 2) a specific business group with potential as a group with moderate potential, expertise should be added in some groups that have the potential to be more outstanding, including transportation and communication business, real estate business, construction business, and educational service business 3) Potential groups that focus on serving in the country or public service are financial institutions, health and social services and household service groups and employment. 4) New business groups, a business sector that has a tendency to increase significantly in demand and growth as the environment and globalization change [3].

Moreover, the competitiveness analysis concept using the diamond system model [4] to develop a business environment analysis model based on the diamond model concept to analyze the business environment. There are four main components: 1) Input factor which is the resource factor that goes into the raw material that enters the industry, human resources, technology capabilities, and infrastructure in various fields including sources of funds that affect the business operation of the organization. 2) Strategy, structure and competition of the organization. This is the context and atmosphere of business competition. 3) Supporting and related businesses which is the existence of various businesses, related to industry organizations. This includes suppliers and other industries. 4) Demand conditions are attitudes, tastes and needs of domestic consumers towards products and services. Consumer demand has a direct impact on products and services. Meticulous demands force organizations to produce products that meet consumer demand [4].

On the other hand, researchers have defined competitiveness as business competitiveness. In the analysis of the business environment to assess the competitiveness of the business in production, demand-side, competition and strategy, as well as government policy.

Value added

Value added can be done in 4 cases: product value, service value, personnel value, and image value [5]. There are 4 ways to add value to the product to be accepted in the market: 1) Product design and packaging, there are commercial brands and beautiful packaging designs suitable for distribution. 2) Product processing, packing sachet for sale, product development and innovation to achieve internationalization 3) Procurement of distribution locations with distribution through online media including fairs for sale at trade shows and sales to tourists. 4) Public relations products, in addition to various online channels are used to promote products [6].

On the other hand, researchers have defined the meaning of adding value means creating added value to the product in product design, product processing, providing sales locations and, promoting products to be marketable.

Innovation management ability

Innovation management capabilities are the ability to transform concepts and knowledge into product creation. Processes and systems that continue to benefit entities and stakeholders [7]. Innovation competence can be described in many dimensions both strategies that promote innovation, organizational behavior, working process, products and new market pursuits or in terms of vision and strategies that support innovation, talent and creative management resources, organizational structure and system, working atmosphere, corporate culture [8]. In terms of doing business, it may be faced with more and more competitive conditions. The development of innovative capabilities helps to increase the competitiveness of the enterprise. From the development of processes, products and services that are superior to the competition in the industry [9]. Corporate innovation is the overall innovative ability of the organization to bring new product to market through a strategic orientation involving innovation behavior and processes [10].

On the other hand, researchers have defined innovation management capabilities as a means to promote product quality enhancement with respect to product development. Encourage work systems and processes, being creative, new ways of working, accepting new ideas and ways of working. Moreover, a variety of innovative marketing channels have been developed including enhancing the quality of service.

Performance of farmers

Traditional performance measurement focuses on financial performance measurement caused limitation because measurement does not fully reflect organizational capabilities [11] ; [12], an effective organizational performance measurement system can measure results in two

ways: measure economy with such metrics, financial ratios, profitability market share growth and the measure of satisfaction to the stakeholders of the organization, including customer satisfaction, employee satisfaction, social performance and environmental performance [13] ; [14].

On the other hand, the researchers define farmer performance as a means of farmer performance in terms of monetary performance: profit, sales, operating income, goals and non-monetary performance, which is the ability to meet customer needs. Creating customer satisfaction, old customers keep returning or having a growing number of new customers.

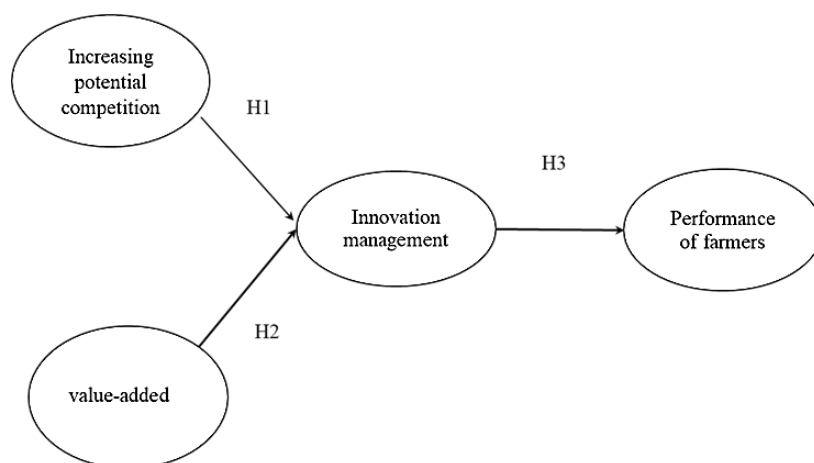
The review of related concepts, theories and research can be summarized as research hypotheses, including

Hypothesis 1: Competitiveness has a positive direct influence on the ability to manage innovation.

Hypothesis 2: Value-added creation has a positive direct influence on the ability to manage innovation.

Hypothesis 3: The ability to manage innovation has a positive direct influence on the performance of farmers. From reviewing concepts, theories, and documents throughout relevant research to create a research framework for study. Increasing competitiveness, value added and ability to manage innovation of mango agricultural products for export, as shown in Figure 1.

Research conceptual framework



Research Methods

A. Population and sample

The population used in this research is mango farmers in Bang Khla District, Klong Khuean District, Plaeng Yao District, Chachoengsao Province, with a total of 7,168 cases (Data as of

April 4, 2020) [15] , which is divided into Unit of Analysis of this research is an individual system. Sample group is a group of farmers which is located in the district in Bang Khla District Klong Khuean District, Plaeng Yao District, Chachoengsao Province. The researcher considered the nature of the research data that would require advanced statistics. Therefore, the sample size was determined in accordance with the preliminary statistics. Using a large sample for determining the sample size. The number of samples was approximately 20 subjects per sample parameter [16]. 14 variables were used, and the sample size was 280 samples. Therefore, the research used 280 samples. According to the concept of [16], farmers were assigned as respondents in the research.

B. Research tool

This research is a research tool based on the quantitative research methodology. Using questionnaires which covers the definition of the variables in both groups studied the researcher used a questionnaire to collect opinions of mango farmers. The questionnaire is characterized by a 5-level rating scale covering operational definitions.

Building and testing the quality of research tools

1. Creating a research tool with steps as follows: 1.1) Creating a quantitative research tool. The researcher builds on the conceptual framework. From the study of concepts, theories and related research to develop a research framework and to define the nomenclature of variables the guidelines were used for creating questionnaires and questionnaires in research. 1.2) Prepared questionnaires to collect data for quantitative research. Indicators for all 14 observable variables were established with content consistent with the research objective and terminology definition. To use for hypothesis testing which variable is measured by operating definition.
2. Quality testing for research tools, the steps were: 2.1) Content Validity test by using a questionnaire created for 3 experts to check the consistency of questions with objectives, conceptual frameworks in research as well as definitions of research variables and bring to improve questions the consistency index was determined between the question and the objective characteristics of the research using the formula IOC (Index of Item Object Congruence) = $\Sigma R / N$, and compiled the opinions of the experts individually. The index of consistency between questions must be at least 0.50 to be considered consistent with the research objectives and terminology. And can be used as a question in a questionnaire [17]. The above values between 0.70 - 1.00 can be used as a question. 2.2) Verifying the reliability to test the accuracy of the instrument from an experiment by trying out on agriculture, not a real sample of 30 people using the Alpha Coefficient analysis of the Cronbach method [18].

The confidence value of the whole questionnaire must be 0.70 or higher to be considered acceptable [19]. Test the quality of the research tool by checking for confidence. Using the alpha coefficient according to the Cronbach method it was found that the confidence of the questionnaires divided by each area was between 0.80-0.90, which was in accordance with the requirements. Therefore, such questionnaires can be used to collect research data.

C. Data collection

The researcher conducts the data collection. The details are as follows: 1) using questionnaires to collect information from farmers. The research had 14 observable variables with the sample size should be 10-20 times that of the observation variable [20] and the sample size was 140-280. Collect quantitative research data. It appears that there are 280 questionnaires that are valid and complete, which can be further analyzed.

D. Data analysis

Researchers have analyzed the data using descriptive statistics and the data obtained to analyze the statistical values consisted of frequency, percentage and standard deviation by statistical program and Confirmatory Factor Analysis and Structural Equation Model (SEM).

V. Results

Total number of respondents in this study was 280. The general data of the respondents found that most of them were male. Most of them are older than 50 years, 72.50%. Most of them have 11-20 years of experience in farming, accounting for 27.50%. Most, accounting for 82.14 percent, most of the average annual income of farmers. 100,001-150,000 baht, and the most have 20 years' experience in mango cultivation, 36.43 percent.

The results, opinion levels in various fields

1) Opinions on the causal factors of innovation management capacity

1.1) Opinions on causal factors, competitiveness, the overall level was at the moderate level (= 3.30, SD = 0.18). When considering each aspect, it was found that the side with the highest mean of opinion was the input factor (= 3.85, SD = 0.56), followed by the competition and strategy (= 3.46, SD = 0.45), respectively.

1.2) Opinion on the causal factor of value added. Overall, it was at the moderate level (= 2.91, S.D. = 0.64). Distribution locations (= 3.28, S.D. = 0.98), followed by product promotion (= 2.95, S.D. = 0.82), respectively.

2) Results of study on the ability to manage innovation. Overall, it was at the medium level (= 2.62, S.D. = 0.63). When considering each aspect, it was found that the side with the

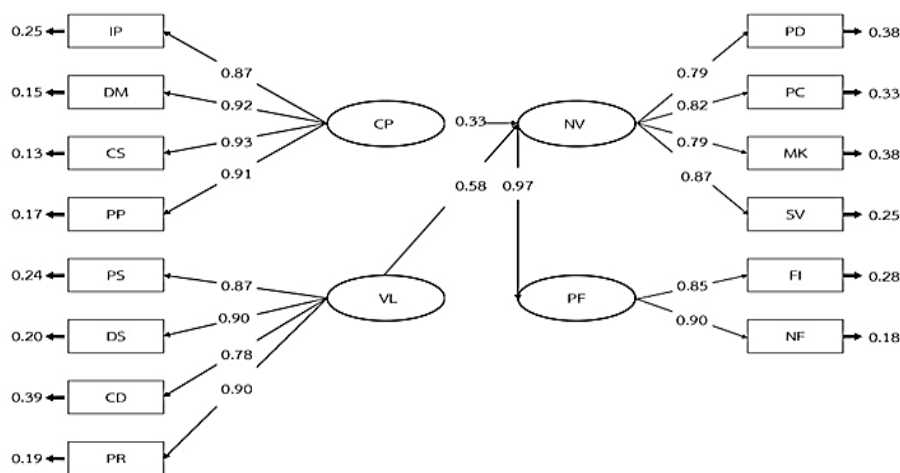
highest opinion of the average was service. At high level (= 3.30, S.D. = 1.20), followed by process (= 2.96, S.D. = 1.04), respectively.

3) Results of studies on the outcomes of the ability to manage innovation.

3.1) Opinion on results of farmers' performance. Overall, it was at the moderate level (= 2.87, S.D. = 0.69). When considering each aspect, it was found that the side with the highest opinion mean was non-financial performance (= 3.14, S.D. = 0.83), followed by financial performance (= 2.59, S.D. = 0.80), respectively.

The study results of the influence of the variables on the research hypothesis

From the analysis of the causal relationship structure model increasing competitiveness, value-added and innovative management capabilities of mango agricultural products for export. Can be shown as in picture 2.



Chi-Square= 55.08, df=47, p-value=0.19553, RMSEA=0.025

The statistical values used to investigate were as follows: Chi-square value was 55.08, and was statistically significant at 0.19 level (p-value was 0.19). Chi-square value was 1.17. The relative coexistence index (CFI) is 1.00, the eccentricity index (GFI) is 0.97, the eccentricity index (AGFI) is 0.94, and the square root of the mean square error of the estimation (RMSEA) is 0.03, which passes All criteria Shows that the model is consistent with the empirical data The results of the analysis of the causal relationship model and results are detailed, competitive potential enhancement, value added and innovative management capability of mango agricultural products for export. The set of variables with forecast coefficients are as follows: Innovative management of 0.77 can explain the variance of the causal factors to innovation management at 77 percent, and farmer performance of 0.94 can explain the variance in the performance of farmers by 94 percent.

Table 1: Direct influence (DE), total influence (TE) and quadratic multiple correlation coefficient (R²) of the causal relationship structure model, innovative management capability of mango agricultural products for export.

| Antecedents | Consequences | | | | | |
|----------------------------|----------------------------|----|--------|-----------------------------|--------|--------|
| | Innovation management (NV) | | | Performance of farmers (PF) | | |
| | DE | IE | TE | DE | IE | TE |
| Potential competition (CP) | 0.33** | - | 0.33** | - | 0.32** | 0.57** |
| Value-added (VL) | 0.58** | - | 0.58** | - | 0.32** | 0.57** |
| Innovation management (NV) | - | - | - | 0.97** | - | 0.97** |

**** $p < 0.01$; DE is direct influence; IE is indirect influence; TE is total influence**

From Table 1, it was found that the variables that were constituents of cause and outcome variables, increased competitiveness, value added and innovative management capabilities of mango agricultural products for export developed had direct influence and indirect influence. And combined influence Divided by research hypothesis. The details are as follows

Hypothesis 1: Increasing competitiveness has a positive direct influence on innovation management.

It was found that competitiveness potential (CP) was found to have a positive direct influence on innovation management (NV) with a direct influence of 0.33 and a total influence of 0.33, statistically significant at a scale of 0.01, so the research hypothesis was accepted at 1.

Hypothesis 2: Value added has a positive direct influence on innovation management.

It was found that the value added (VL) was found to have a positive direct influence on innovation management (NV) with a direct influence of 0.58 and a total influence of 0.58, statistically significant at the level of 0.01. 2

Hypothesis 3: Innovation management has a positive direct influence on the performance of farmers.

It was found that the management of innovation (NV) had a positive direct influence on the performance of farmers (PF) with a direct influence of 0.97 and a total influence of 0.97, statistically significant at the level 0.01 accept research hypothesis 3.

VI. Discussions

Hypothesis 1: Increasing competitiveness has a positive direct influence on innovation management.

From the research results it was found that Increasing competitiveness has a positive direct influence on innovation management. This is due to the fact that farmers are aware of

changes in current conditions, and need to develop competitiveness, businesses that need to adapt for sustainable survival. Competitive in business. This includes analyzing the business environment to assess the competitiveness of the business in production, demand-side, competition and strategy, as well as government policy. This is consistent with research by [21] showing that Analysis of the business environment has four main components: the input factor, the resource factor that goes into the raw material segment. Human resources Technology capabilities Strategy, structure and competitive environment of the organization Supporting and related businesses and demand conditions, ie attitudes, tastes and needs of domestic consumers towards products and services.

Hypothesis 2: Value added has a positive direct influence on innovation management.

From the research results it was found that Value added has a positive direct influence on innovation management. This is because the farmers are aware of the value-added creation. To increase the product's capabilities in product design, product processing, providing sales locations and promoting products to be marketable. This is in line with Prunea's research [22] in creating value added to the product to be marketable through four methods: product design and packaging. There are commercial brands and beautiful packaging designs suitable for distribution. Processing of packaged products for sale is product development and innovation to achieve internationalization. Distribution location with distribution through online media and product publicity by using various online channels.

Hypothesis 3: Innovation management has a positive direct influence on the performance of farmers.

From the research results it was found that Innovation management has a positive direct influence on the performance of farmers. This is due to the introduction of innovation to develop and improve the service process, including differentiating and adding services to meet customer needs. Also innovation the results of the development and introduction of new products in technology help them meet customer needs and create competitive advantages and, more importantly, increase the profit of farmers groups or farmers' performance. Better this is consistent with the research of [23] ; [7]. Efficient performance is holistically measurable in two areas: economy with such metrics, financial ratios, profitability market share growth and the measure of satisfaction to the stakeholders of the organization, including customer satisfaction. Employee satisfaction social performance and environmental performance.

VII. Contribution

1. Policy Contribution for Research

1.1 Knowing the competitiveness to add value added and the ability to manage innovation of mango agricultural products for export which can develop local competitiveness to be able to develop sustainable mango agricultural products by themselves. It can also enhance competitiveness. Value added and innovative management capability of local wisdom in mango agricultural products leading to added value creation for export and has synthesized a molded model to bring the model more competitive value added and ability to manage innovation of mango agricultural products. Transmitted to the practice of enhancing the potential to promote the export of mangoes to meet the standards of the world market.

1.2 Know the guidelines for enhancing the innovation management potential of local wisdom. To add value to agricultural products and provide training for mango farmers for export. The results obtained from the research can be manipulated for the producer community, which is social contribution to driving the success of the farmers group, together with the descriptive spatial research results in the context of the community. Contributing to the community towards the sustainable development of the community.

1.3 He learned of being a model farmer in innovative management of local wisdom in agricultural products of Chachoengsao Province. Including the benefits of applying them to enhance the concept and development of sustainable development.

2. Management Contributions for Research

The ability to manage innovation of local wisdom in the products of mango agricultural products. This allows farmers, entrepreneurs and personnel to be involved in developing new market channels to change the marketing paradigm in consumer, information technology and communication. Including technology that will bring about innovation using online channels. The farmers must adapt to keep pace, which is an important part of the development of entrepreneurs to be equal to foreign countries For changing the form of working methods that allow farmers to participate in the creation of a new working model. In designing, improving and improving the quality of work together. There are many innovative and creative techniques without blocking useful opinions. And for enhancing product quality, when farmers have internal cost control, product quality should be raised. Analyze the causes of impact on production costs, cost reduction, waste reduction methods, and establish generally accepted standards as productivity increases, product quality enhancement has to start at the micro level, ie from the individual level, so farmers have to adjust their roles in order to raise

the quality of their products without waiting for the government. Quality and efficient inputs to increase product value.

3. Theoretical Contributions

This study confirms components of competitiveness, value added, and manageability innovation of mango agricultural products that affect farmers' performance and the causes of organizational performance. And it brings theoretical benefits, such as the integration of concepts and theories about competitiveness. Theories of added value Concepts and theories of innovation management of it is applied by considering the ability to manage innovation. Come as a pass variable and in the study of the effect factor, which is the operation of farmers. This study is a casual research to prove the relationship and influence between the competitive potential variable, the value added and the performance of farmers. Functions focused on testing the mediator of innovative handling capabilities. It is also a study in the context of mango farmers. Not much research has yet been done on the ability to manage innovation as an intermediate or transmission variable. This is because, in the past, most researches have studied the ability to manage innovation. It is an antecedent variable, which the above findings can be further applied to study the influence of this variable with other variables.

Suggestions

Policy recommendations

1. An agency responsible for supporting and involved in innovation management capability of local wisdom, Thai farmers group. Able to use information to guide the knowledge of community leader's president of community enterprises in managing to create innovation in performance for farmers.
2. Responsibilities are planned and established at the community level, village, and sub-district by providing a division responsible for organizational innovation management of local wisdom, Thai farmers group. So that the operation takes place in the long term. The main responsible person may be the community leader. Chairman of the Community Enterprise and facilitating actions with both internal and external partners improve the level of cooperation and communication to the international level. To increase the capacity of the community to achieve sustainable success.
3. Ability to manage innovation of local wisdom to farmers groups within the network of agricultural entrepreneurs. To create cooperation to act as a center for information exchange Knowledge and opinions establish a central database system to act as a center for information exchange knowledge and opinions.

4. The government sector should have a policy to accelerate, promote and support the innovation development of local wisdom, Thai farmers groups with links with private sector agencies as well as various benefits. This will enable the development of innovations that truly meet the needs of farmers.

Management recommendations

1. To provide information for community leaders the chairman of the farmer group community enterprise plans to apply the principles of competitiveness for more efficiency. This will positively affect the performance of farmers. Provide opportunities for farmers groups to participate in competitiveness development, businesses that need to adapt for sustainable survival.

2. To provide information for community leaders Chairman of the Community Enterprise Farmers Group There is a promotion in various areas to create added value, which makes community leaders Chairman of the Community Enterprise Realized the importance of product processing, product design, distribution location including promoting products to create an effective value-added operation system.

3. To provide information for community leaders. The President of the Farmers' Community Enterprise was aware that the community would have the potential to create learning process from farmers group In the field of work processes innovations or techniques and methods of working that cannot be learned is defined as knowledge gained through the processing of knowledge. Exchange of knowledge In order to be able to promote farmers' groups to be successful in business.

4. To provide information for community leaders, the chairman of the farmer group community enterprise has been involved in creating and developing new marketing channels. Including technology that will lead to innovation in the use of online channels and social networks as the farmers' groups, they have to adapt to keep pace and have a vision to play an important part in product development to be comparable to foreign countries.

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