

GUIDELINES FOR MANAGING RUBBER PROCESSING INTO COMPETITION FOR SUSTAINABLE EXISTENCE

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ABSTRACT

Aim: The purposes of this research were: 1) to study the structural and operational features of rubber business organizations, 2) to study the components of a structural equation model of guidelines for sustainability in rubber processing, and 3) to improve the structural equation model (SEM) of a structural equation model of guidelines for sustainability in rubber processing.

This research was an inductive research with mixed-methodology research including the qualitative research through in-depth interview and the quantitative research by collecting the quantitative data from the rubber industrial business executives of 500 workplaces divided into large enterprises, and small and medium enterprises to analyze and improve the structural equation model (SEM). And finally, the structural equation model was fit and in accordance with empirical data.

Finding: The results of the research revealed that guidelines for managing rubber processing into competition for sustainable existence consisted of four main factors: resources, organization management, innovation, and market orientation. Each of the factors has the highest point average as follows: management, i.e., authorization and management of each department to achieve the assigned plans and goals; resources, i.e., recruitment process of hiring employees with knowledge and skills of rubber processing; market orientation, i.e., manufacturing goods in accordance with the current customer behavior and trends; and innovation, i.e., promotion of learning organization to crystalize the knowledge and skills of rubber processing with low costs and create the consistent innovation. The large enterprises and small and medium enterprises focused on the guidelines for rubber processing to remain sustainable at statistical significance level of 0.05.

Conclusion: This research could be concluded that the structural equation model analysis was proved by congruence evaluation criteria including Chi-square probability of 0.069, relative Chi-square of 1.120, index of item objective congruence of 0.949, and root mean square error of approximation of 0.015.

Keywords: Rubber Processing, Sustainable, Resources, Organization Management, Innovation, Market Orientation.

INTRODUCTION

The economic stagflation causes the price fluctuations and price slump of the rubber. The Thai government has some measures to help the farmers and drive to solve the issue of

speculation and price stability for farmers’ benefits and rubber industry. Therefore, it is necessary to create the added value of rubber products to be promoted for rubber business growth and sustainability. It is, therefore, an urgent necessity to find out some ways of improvement and development for competitiveness. This research shows some problems and solutions (Rubber Authority of Thailand, 2020).

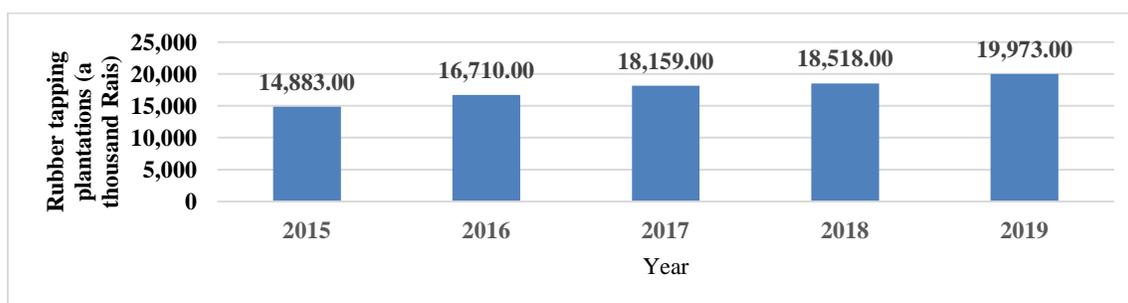
The four largest rubber producing countries: Thailand, Indonesia, Vietnam, and Malaysia produced most of the world’s natural rubber in 2019 with rubber plantations of 57.47 million Rais or 64.89 percent of the world’s rubber plantations. The world’s largest natural rubber plantations during 2015-2019 are shown in the Table 1 below.

Year	Plantations (per a million Rais)					
	Thailand	Indonesia	Vietnam	Malaysia	Others	Total
2015	18.43	22.29	6.16	6.64	24.08	77.60
2016	18.47	22.60	6.08	6.70	24.91	78.76
2017	19.11	22.66	6.06	6.76	33.55	88.14
2018	20.67	22.79	6.04	6.76	32.09	88.35
2019	21.66	23.04	6.01	6.76	31.09	88.56

Note: 1 Rai = 0.16 Hectare

Thailand has the 2nd world’s natural rubber plantations below Indonesia. However, the highest volume of rubber has been produced in Thailand and exported since 1991. Most exported products are the primary processed raw materials with low added value, e.g., ribbed smoked sheets, block rubbers, and concentrated latex. This directly affects the countries and farmers’ income. If the performance quality of rubber processing is improved, it will be much more beneficial to the country and the rubber farmers. Therefore, the rubber trees are still the cash crops or economic plants needed to be promoted and developed (Rubber Authority of Thailand, 2020).

Rubber products are made for various applications, but at present the farmers are facing the problems of price slump, marketing and domestic consumption or the imbalance of demand and supply. The cause of supply issue is the overproduction of rubber (The Office of Industrial Economics, 2019) because the rubber trees are cash crops that provide a high return comparing with other economic plants. Therefore, this persuades farmers to consistently extend the plantations as shown in the Figure 1.



**FIGURE 1
COMPLAINT STATISTICS IN THAILAND DURING 2015-2019**

The Figure 1 shows the rubber tapping plantations where had been consistently increased during 2010-2018. The plantations of 14,883 Rais in 2010 became 18,159 Rais in 2012; 18,159 Rais in 2014 became 18,518 Rais in 2016; and 19,973 Rais in 2018.

Furthermore, the rubber division (Office of Agricultural Economics, 2019) revealed that the rubber products had been continuously increased during 2010-2018. The rubber products of 3,252.13 thousand metric tons in 2010 became 3,778.01 thousand metric tons in 2012; 4,323.97 thousand metric tons in 2014 became 4,536.96 thousand metric tons in 2016; and 5,083.03 thousand metric tons in 2018 as shown in Figure 2 below.

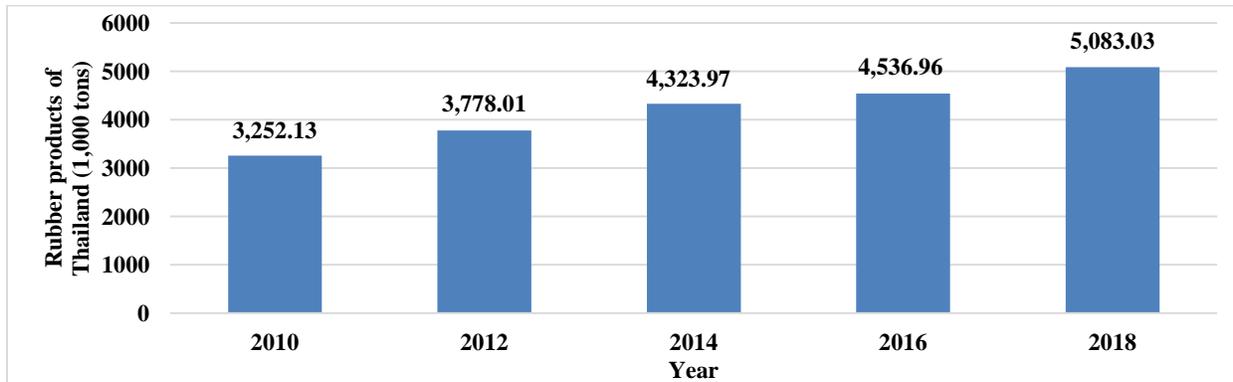


FIGURE 2
THE RUBBER PRODUCTS OF THAILAND (1,000 TONS)

On the other hand, the value of rubber product sales had been continuously decreased during 2010-2018. The sale value of 368,497 million baht in 2010 became 339,624 million baht in 2012; 238,155 million baht in 2014 became 211,982 million baht in 2016; and 98,451 million baht in 2018 as shown in Figure 3 below.

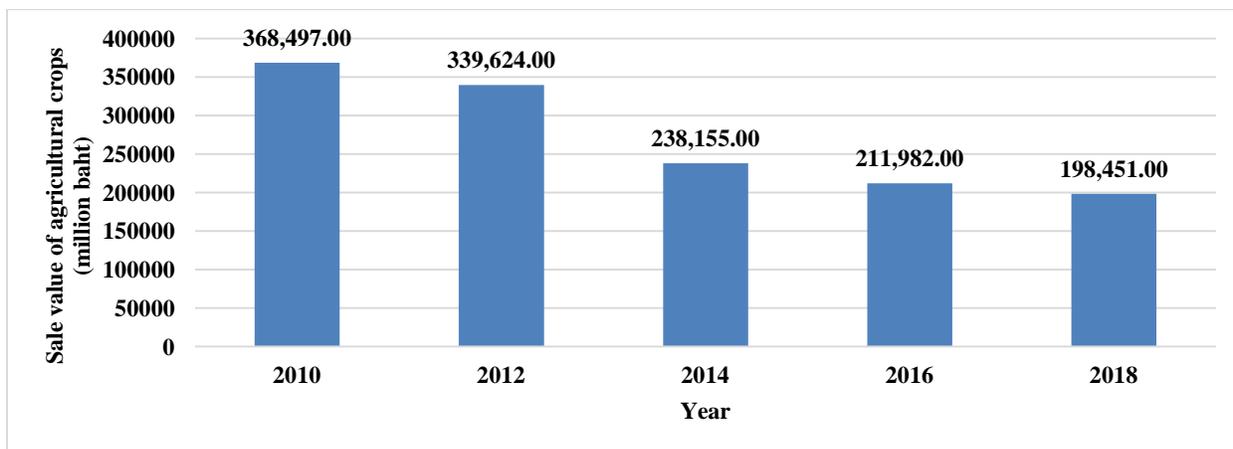


FIGURE 3
THE SALE VALUE OF AGRICULTURAL CROPS

The significance and problems of rubber industrial business include the low sale value per Rai , non-standardized rubber quality, high costs of production, wages and energy costs, less processing of products, insufficient personnel and researchers of the rubber, lack of knowledge

of processing and added value, price instability of the products, ways of manufacturing, inefficient operations and management, lack of consistent research and development, lack of innovation development, lack of technological system of efficiency enhancement, overproduction for the supply, increasing new operators and stiff competition, and sale value reduction. These directly inevitably affect the rubber business of the farmers and entrepreneurs. To find ways of the problem solutions, the researcher was interested in the study of guidelines for managing rubber processing into competition for sustainable existence. The four components of guidelines for managing rubber processing into competition for sustainable existence are as follows.

Resources

The physical resources used to run a business include the machines, technological tools, and other facilities. The business operators try to adapt themselves to the situations of increased business competition focusing on the advantages of competition with various strategies by implementing the physical business resources (Barney, 1991) for the highest benefits. Furthermore, the organizations of heavy industry focus on the tools and machines of processing the raw materials into useable products, and the consistent improvement and development of technology (Barney & Clark, 2007).

Organization Management

The organizational management process of successful operation must depend on those who operate through the planning management process (Silpcharu & Wantanakomol, 2017a), the organizational management, directions, corporation, and supervision for management (Stephen, Robbins & Coulter, 2003) with the resources in the organization, e.g. employees, materials, and ways of operation, the successful operation according to the assigned goals and consistently updated management to suit the individuals and environment by developing the employees and operational systems for organizational success (Heizer et al., 2017).

Innovation

The process innovation is a new operational process or improved former process and the changes of techniques, equipment or software programs to reduce the costs of manufacturing process development or the new product delivery (Gripsrud, 1990). This is accordance with the study of Hagedoorn & Cloudt (2013) stating that the process innovation is a type of intangible innovation implementation because of the changes of manufacturing ways and process for improving former process such as B2B E-commerce to reduce the cost of printed documents of the business sector for the reduction of business operational expenses. Furthermore, Im2Market (2015) defines the process innovation as an instrument, equipment, and technological knowledge that is a mediator between the input factors and output factors.

Market Orientation

The market orientation is the collection of market data of customers, competitors and market conditions, data distribution and value provision for the customers. The results of the study claimed that the market orientation directly influenced the organizational success and sustainable advantages of the market competition for the organizations (Mentzer et al., 2004),

created and presented some value for the customers' satisfaction. In summary, it is the situational exchange of both sides' satisfaction and values by implementing market strategies through the library work and proactive information services, finding ways of service value development and creation, informing value and enhancing easy ways of getting services with the highest satisfaction (Armstrong, 2009).

Objectives

The objective of this research was to develop the structural equation modeling of the Guidelines for managing rubber processing into competition for sustainable existence.

Hypotheses

In accordance with the objective and related literature, the researcher determined six hypotheses based on the related theories as follows.

H₁ The resources variable directly influences the innovation variable.

Agarwal (2015) on "The Process of Networked Civic Innovation: Examining the Role of Values, Resources, and Power in Community-Based Technology Project" found that the innovation process was created by the environmental learning context and resources and setting the innovation model to meet some conditions with either supports or obstacles of the innovation process assigned by the network. This is in accordance with the studies of Skarzynski & Gibson (2008) claiming that the cooperates must have the innovation competency for successful business performance, Davila & Sheldon (2006) stated that the need of cooperate the development of innovation competency is based on the positive behavior found that the capabilities and motives of the executives and employees create a good innovation, and Lawson & Samson (2001) claimed that the innovation competency as a corporate's capacity of transforming ideas into new products and new process for the corporate's benefits and the stakeholders assigned the innovation competency as the corporate's competency to set a new value and develop resources.

H₂ The resources variable directly influences the organization management variable.

Chaudhary (2016) stated that the system assets or resources advantages consist of the tangible assets such as products and buildings, and the intangible assets such as copy right, product brands, organizational reputation. Most organizations utilize the available resources for the competitive advantages, and the management of sufficient resources or the efficient management is the highest benefit for competitive advantages.

H₃ The innovation variable directly influences the organization management variable.

The study of Giniuniene & Jurksiene (2015) on Interrelations and Impact on Firm Performa concluded that the scholars mentioned that it is difficult to try to measure the concept of finding the relationships between the dynamic capability and other factors. This is in accordance with study of Paul Trott (2012) claiming that the dynamic capability is not really a perfect theory because of without the clear area of relationships. It may assume that the model of the dynamic capability and interdependence of the other variables. Some cooperates are successful in competition in the fluctuating circumstances while the others cannot do. Therefore,

the objective of the study was to support the previous studies to explain the relationships among dynamic capability, organizational learning and innovation, and this affects the relationship of the corporate's efficiency through the review of previous results for the further empirical tests.

H₄ The innovation variable directly influences the market orientation variable.

Suliyanto & Rahab (2012) studied to explain the relationships between the marketing plan and corporate's competency and to study the market orientation learning. Entrepreneur orientation and innovation are the main factors for success of the corporates with the implementation of technology. The searcher assigned the structural equation model to verify the relationships of the structures. The results of the study revealed that the innovation variable affected the business operation; the marketing plan enhanced the strength in the small and medium enterprises. The Market information given by customers and competitors helped the corporate learn the market circumstances for better competitive advantages, and business outcomes. The corporates must have the learning competency and employees' entity in accordance with the organizational engagement. The results of the study also suggested that the corporate should enhance learning strength and innovation to improve the performance outcome for market success.

H₅ The organization management variable directly influences the market orientation variable.

The competition advantages of business mainly depend on the business resources. The business resources include the following four important features: business vales, difference from the competitors, difficulty of imitation, and non-replaceability (Vracking, 1990). The organizations that support the individuals to create the innovation enable to enhance the long-term business competitiveness and growth. Other factors affecting the business of competition and these advantages are the characteristics created by the business itself to meet the customers' demands of costs and product differentiation (Gillespie et al., 2010), and the study of Lynch (2015) on "Configuring the Strategic Orientation of manufacturing Firms for Economic Sustainability A study of the UK Touring Caravan Industry" stating that configuring the strategic orientation of manufacturing firms is necessary for the supply chain orientation which in the past it was only the supply chain management for sustainable competitive advantage.

H₆ The overall importance levels of the guidelines for the sustainable rubber processing are different by the different size of business

The relationship among the large successful corporates with the financial returns is positively related to the ways of excellent operation and the forms of potential measurement are developed for the small and medium enterprises different from the large enterprise (Rainey, 1999), and this is also an accordance with the study of Tickle et al. (2016) on Deploying Business Excellence Success Factors for High Performance stating that the sizes of the organization affect the excellency status. The results of the study revealed that in average most organizations with appropriate preparation of management are bigger and more efficient than the one with inappropriate preparation of management, and the organizations with appropriate preparation of management tend to use the specific and modern instruments effectively and efficiently.

METHODOLOGY

This study was designed as an inductive research with mixed methodology.

1. The qualitative research with in-depth interview: the population in this research consisted of nine experts selected through implementing the purposive sampling method with the criteria of qualifications of experts in accordance with the Doctor Business Administration Program of the Industrial Business Administration Program under the Faculty of Business Administration, King Mongkut's University of Technology North Bangkok including three groups of these experts: three representatives of the entrepreneurs and executives, three of the officials from the government sector and other related agencies, and three of the academic profession.
2. The quantitative research: the population in this research was a total of 500 executives of the rubber industrial business registered under the Ministry of Industry: 250 executives of the large enterprise which defines the industry with the fixed asset value over 200 million Baht or over 200 employees of the employment and the other 250 executives of the medium and small enterprises which define the industry with the fixed asset value not over 200 million Baht or not over 200 employees of employment according to the regulations of ministry of industry on employment affairs and the value of fixed assets, B.E. 2545 (2002).
3. The qualitative research with group discussion method to verify the structural equation model: the population of this research consisted of seven experts selected through implementing the purposive sampling method with the qualification criteria of experts in accordance with the Doctor Business Administration Program of the Industrial Business Administration Program under the Faculty of Business Administration, King Mongkut's University of Technology North Bangkok.
4. The results of examining the index of item objective congruence (IOC) with the evaluation form of the experts were deployed as a guideline for the adjustment of the questionnaire. In this research, the IOC values ranged from 0.60–1.00. The questionnaire after the verification of the experts was distributed for try-out through 30 respondents with the similar group of this study population.
5. The try-out results were analyzed through implementing the score of the questionnaire to determine the discrimination of each item: the checklist items through determining standard deviation, and Likert's scales items through determining the corrected item – total correlation. The reliability of questionnaire with Likert's scale items was analyzed through determining the Cronbach's Alpha Coefficient (Silpcharu, 2020) using the Statistical Package for the Social Science for Windows (SPSS). The results of analyzing the discrimination of each item showed that the standard deviation of the questions with check-list items was of 0.35-2.23 and the corrected item – total correlation of the questions with the Liker's scales items was of 0.33-0.85. The reliability of the questionnaire was analyzed through the Cronbach's Alpha coefficient was of 0.98.

RESULTS

The results of analyzing the guidelines for managing rubber processing into competition for sustainable existence were as follows Table 2. For the small and medium enterprises, the overall importance level of the guidelines for managing rubber processing into competition for sustainable existence was high with the mean of 3.55. For each variable, it was found that the importance level of the organization management variable was high with the mean of 3.64, market orientation variables were high with the same means of 3.60, resources variable was high with the mean of 3.57 and the importance innovation variable was medium with the mean of 3.39.

For the large enterprise, the overall importance level of the guidelines for managing rubber processing into competition for sustainable existence was high with the mean of 4.00. For each variable, it was found that the importance level of the organization management variable was high with the mean of 4.06, the resources variable was high with the mean of 4.04, the

market orientation variable was high with the mean of 3.97, and the innovation variable was high with the same mean of 3.95.

Statistics of the latent	Small and medium enterprises			Large enterprise		
	\bar{X}	S.D.	Importance level	\bar{X}	S.D.	Importance level
Overall	3.55	0.33	High	4.00	0.31	High
Resources	3.57	0.48	High	4.04	0.32	High
Organization Management	3.64	0.36	High	4.06	0.32	High
Innovation	3.39	0.50	Medium	3.95	0.40	High
Market Orientation	3.60	0.28	High	3.97	0.38	High

The results of analyzing the structural equation model of the guidelines for managing rubber processing into competition for sustainable existence were as follows Table 3.

Evaluating the Data-Model Fit	Criteria	Reference
CMIN-p	> 0.05	Arbuckle (2016, p.53) IBM SPSS AMOS v.20
CMIN/DF	< 2	Arbuckle (2016, p.601) IBM SPSS AMOS v.20
GFI	> 0.90	Arbuckle (2016, p.614) IBM SPSS AMOS v.20
RMSEA	< 0.08	Arbuckle (2016, p.604) IBM SPSS AMOS v.20

The researcher improved the structural equation model based on the Modification Indices as Arbuckle's suggestions by considering the results of the SPSS to eliminate each of inappropriate observed variables and re-evaluate the new model until the four statistics passed the criteria as shown in Table 3. After the improvement of the structural equation model, it was found that the Chi-square probability was of .069 (>0.05), the relative Chi-square (CMIN/DF) was of 1.120 (<2), the Goodness of Fit Index (GFI) was of .949 (>0.90), and the root mean square error of approximation (RMSEA) was of 0.015 (<0.08). Therefore, it could be concluded that the four statistics passed the evaluation criteria and the structural equation model of the guidelines for managing rubber processing into competition for sustainable existence was fit to the empirical information.

For Figure 4, it was found that the structural equation model of guidelines for managing rubber processing into competition for sustainable existence after the improvement consisted of four latent variables: one exogenous latent variable, i.e., the resources variable and three endogenous latent variables, i.e., the organization management, innovation and market orientation variables. The variances and the standardized regression weights of the endogenous latent variables were as follows.

The resources variable with the variance of 0.15 directly influenced the innovation variable with the standardized regression weight of 0.79 at the statistically significant level of .001, the squared multiple correlation (R²) of 0.63 and the variance of 0.08 directly influenced the organization management variable with the standardized regression weight of 0.58 at the statistically significant level of 0.001, the squared multiple correlation (R²) of 0.83 and the variance of 0.04.

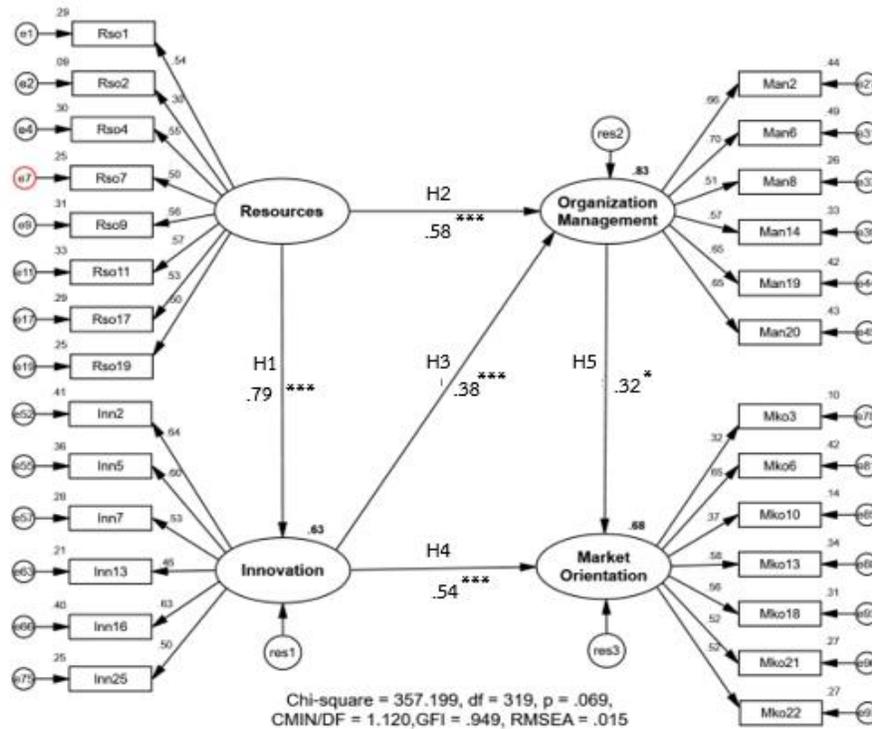


FIGURE 4
GUIDELINES FOR MANAGING RUBBER PROCESSING INTO COMPETITION FOR SUSTAINABLE EXISTENCE AFTER THE IMPROVEMENT IN THE STANDARDIZED ESTIMATION MODE

The innovation variable directly influenced the management variable with the standardized regression weight of 0.38 at the statistically significant level of 0.001, the squared multiple correlation (R²) of 0.83 and the variance of 0.04 directly influenced the market orientation variable with the standardized regression weight of 0.54 at the statistically significant level of 0.001, the squared multiple correlation (R²) of 0.69 and the variance of 0.03.

The organization management variable directly influenced the market orientation variable with the standardized regression weight of 0.32 at the statistically significant level of .05, the squared multiple correlation (R²) of 0.69 and the variance of 0.03 (Table 4).

DISCUSSION

The important point of the research results on the guidelines for the guidelines for managing rubber processing into competition for sustainable existence for business to learn about the rubber processing for the business sustainability. Under the current environment with an increase in the rubber plantation at both national and international levels, the volume of rubber latex in the market has been highly increased. It is necessary to find the guidelines for processing the rubber latex into various usable products for the business survival. The successful rubber processing and sustainable rubber business depend on some important factors.

Table 4
STATISTICS OF ANALYZING THE STRUCTURAL EQUATION MODEL AFTER THE IMPROVEMENT

Variables	Estimate		R ²	Variance	C.R.	P
	Standardized	Unstandardized				
Resources				0.15		
Innovation	0.79	0.96	0.63	0.08	9.10	***
Organization Management	0.58	0.72	0.83	0.04	5.60	***
Innovation			0.63	0.08		
Organization Management	0.38	0.40	0.83	0.04	4.12	***
Market Orientation	0.54	0.33	0.68	0.03	3.54	***
Organization Management			0.83	0.04		
Market Orientation	0.32	0.20	0.68	0.03	2.45	0.014
Resources				0.15		
Rso1	0.54	1.00	0.29	0.36		
Rso2	0.30	0.48	0.09	0.33	5.77	***
Rso4	0.55	0.99	0.30	0.33	9.25	***
Rso7	0.50	1.02	0.25	0.44	8.70	***
Rso9	0.56	1.09	0.31	0.38	9.33	***
Rso11	0.57	1.12	0.33	0.38	9.48	***
Rso17	0.53	0.95	0.29	0.33	9.06	***
Rso19	0.50	0.91	0.25	0.36	8.67	***
Innovation			0.63	0.08		
Inn2	0.64	1.00	0.41	0.30		
Inn5	0.60	0.91	0.36	0.30	11.19	***
Inn7	0.53	0.87	0.28	0.41	10.01	***
Inn13	0.46	0.70	0.21	0.38	8.89	***
Inn16	0.63	0.99	0.40	0.31	11.66	***
Inn25	0.50	0.86	0.25	0.46	9.60	***
Organization Management			0.83	0.04		
Man2	0.66	1.00	0.44	0.29		
Man6	0.70	1.08	0.49	0.27	13.38	***
Man8	0.51	0.71	0.26	0.32	10.15	***
Man14	0.57	0.84	0.33	0.32	11.27	***
Man19	0.65	0.95	0.42	0.28	12.51	***
Man20	0.65	0.97	0.43	0.28	12.63	***
Market Orientation			0.68	0.03		
Mko3	0.32	1.00	0.10	0.71		
Mko6	0.65	1.71	0.42	0.33	6.27	***
Mko10	0.37	0.77	0.14	0.31	5.17	***
Mko13	0.58	1.36	0.34	0.30	6.10	***
Mko18	0.56	1.36	0.31	0.34	6.03	***
Mko21	0.52	1.29	0.27	0.37	5.91	***
Mko22	0.52	1.18	0.27	0.30	5.92	***

*** Statistically significant level of .001

** Statistically significant level of .01

The researcher discussed and summarized this research results with both supportive and contradictory evidences of the previous related studies in seven points as follows.

1. When comparing the components of guidelines for managing rubber processing into competition for sustainable existence between the small and medium enterprises and the large enterprise for overall and each variable, it was found that the importance levels were statistically different at a significant

- level of .05 because the large enterprise had some good managements, consistent improvement of strategic management, learning system of revision and solutions to enhance the knowledge and the best practice for the organizational sustainability. On the other hand, the quality management of the small and medium enterprises slowly moved on. This is in accordance with the study of Tickle et al. (2016) stating that the size of the organizations influences the excellency of the organizations. The results of the study showed that in general the organizations with the appropriate organizational management have higher efficiency than the inappropriate organizational management and the organizations with appropriate organizational management are more likely to implement equipment and tools efficiently and effectively (Silpcharu & Wantanakomol, 2017b).
2. From the hypothesis test, it was found that the resources variable directly influenced the innovation variable with the standardized regression weight of 0.79. This reflected the empirical data of the successful creation of innovation for the rubber processing which factors of the successful creation of innovation were the resources of the organizations, e.g. financial, human, and physical resources and business skills. This is in accordance with the study of Sittichai & Pooripakdee (2018) on "*Organization Management according to McKinsey's 7s Framework that Contributes to Innovation Organization Case Study: Organization Awarded an Excellent Innovation Organization*" stating that the private corporates have some management, operations and other activities that support themselves to become an integrated innovative organization with the Hard S's (known as hardware) and the Soft S's (known as Software). For the Hard S's, the corporate has a horizontal structure to support high working flexibility focusing on sharing opinions and fast directions. For the Soft S's, the style of the chief executive officers is the management of administration for sustainability mainly focusing team work and innovation. This is in accordance with the study of Aryanto et al. (2015) on "*Strategic Human Resource Management, Innovation Capability and Performance: An Empirical Study in Indonesia Software Industry*" stating that the company should enhance the competencies of creating innovation for the innovation management from initiating the concept of production through selling the products. The strategic human resource management (SHRM) is an important component of innovation competency because the human resource is an important part of the innovation creation. This research studied in the implementation of strategic human resource management, capabilities of innovation creation and potential of innovation. For this objective, the empirical research analyzed the data of the software companies in Indonesia and the results showed that the implementation of strategic human resource management positively influenced the innovation capabilities and efficiency. This is in accordance with the study of Skarzynski & Gibson (2008) stating that the corporates must have the innovation capabilities for good innovation performance, the study of Davila & Sheldon (2006) stating that the requirements of corporates to develop the innovation capabilities based on positive behaviors found that capabilities and motivation of the executives and employees influence the good innovation, the study of Lawson & Samson (2001) stating that the innovation competency of the corporates to transform the knowledge and ideas into new products and new process for the benefits of both corporates and stakeholders and the innovation capability is defined as the ability of corporates to assign a new value and develop resources and capability of the corporates to create the innovation, and the study of Vrakking (1990) stating that the innovation organizations supporting the innovation creation of the employees enhance the competitive capabilities and sustainable business growth.
 3. The guidelines for managing rubber processing into competition for sustainable existence for the resources variable: the important item with the highest mean was the recruitment process of employees with rubber processing knowledge and skills with the mean of 4.48. This showed the importance of human resource in the organizations for the rubber processing. This is in accordance with the study of Gillespie et al. (2010) stating that human resource is one of the essential factors causing either the business success or failure because the living resource with competency and skills enabled to apply the non-living resource for the organizational benefits and enhance the competitive competency of the country. Most countries focus on the development of employees because it is the essential and valuable business resource and the employment of efficient employees was the business advantage. Therefore, the human resource investment and management are the business responsibilities to be continuously implemented. These should be assigned as the priority of management. This is in accordance with the study of Armstrong (2009) stating that either successful or failed business depends on the competency of employees. The executives must enable to manage the employees who were from various places and implement their knowledge and techniques of the human resource management.

4. The guidelines for managing rubber processing into competition for sustainable existence for the management variable: the important items with the highest mean was the provision of decision making and management authority to all departments to operate and achieve the goals with the mean of 4.47. This is in accordance with the suggestions of Angkapong (2010) stating that purpose of the organizing is to assign tasks and the importance of the responsibilities. The organizing is defined as the consideration given on what to do and the report writers are supposed to obtain the former examples of the business with proper organizational management to get the competitive success and enable to overcome the other competitors. The business with proper organizational management can motivate the executives and employees to understand the importance of organizational success. The work specialization of task division consists of: providing tasks to each department, managing each and delegating authority. The tasks can be divided into subtasks based on the improvement of job description and job specification and all of these instruments must be ready for both executives and their employees who need to know about the job description, the organizational structure, the span of control, and the chain of command. The strategic changes depend on the structural changes because the new job positions could be appointed or eliminated or mixed up. The organizational structure must be specified how the resources were utilized and how the business objectives were assigned. The support of resources and determination of the objectives based on the geographical conditions are different from the product or customer structures. The general styles of department division were based on the functions, divisions, strategic business units and matrix.
5. The guidelines for managing rubber processing into competition for sustainable existence for the innovation variable: the important items with the highest means included the consistent support for the learning organization to crystalize the knowledge and skills for the rubber processing to reduce the costs and create the innovation with the mean of 4.44 (SD. = 0.715) and the implementation of the high speed internet network for the development of the rubber processing with the mean of 4.44 (SD. = 0.718). These two items consisted of the same mean and were highly important for the creation of innovation because the creation of innovation needed the knowledge. Nowadays, the innovation has caused the rapid changes of things though the support of technology. This is in accordance with the study of Banfield (2018) claiming that the innovation is created by utilizing the integrated knowledge of various sciences to invent new things for social and economic benefits. The research also presented the innovation concept consisting of three components: scientific and technological bases, technological developments, and needs of the market. The innovation management of the organizations depends on the learning factors which determine the organizational innovation as a result of the capabilities of the learning management and influenced the creation of organizational innovation. Furthermore, the implementation of appropriate manufacturing technology in the industries can provide the competitive advantages and the business benefits.
6. The guidelines for managing rubber processing into competition for sustainable existence for the market orientation variable: the important items with the highest means included manufacturing the products of rubber processing based on the current customers' behaviors and trends with the mean of 4.62, strictly following the agreement and terms given to the customers with mean of 4.54, supporting the E-commerce of the products of rubber processing for everyone to access and easily purchase the products with the mean of 4.52, and applying the customers' suggestions or advices of to further the ideas for the development of rubber processing with the mean of 4.50. For the marketing operations, the customers were considered the most important ones of the business because the business could be sustainable with the support of the customers. This is in accordance with the study of Mentzer et al. (2004) claiming that the market orientation is the business philosophy, organizational culture and organizational behaviors with the market data of customers, competitors, and market environment collected and distributed to the employees to create the value for the customers. Another important point of this study is the commitment of agreement and terms given to the customers. The corporates offer whatever or promised to do something or agreed, e.g., advertisement or whatever informed through various channels of media. Those agreement and terms must be practicable but not exaggerated advertisement. If these are not practicable as declared, it can make the customers untrust and the business operation ends, for example, the banks clearly stipulate the bank policy of ethics for the shareholders and the customers as *"the bank strictly follows the commitments, agreements and terms given to the customers. If not, the bank must inform the customers as soon as possible to find the solutions together"*. This showed that the marketing operations of the commitment of agreements and terms given to the customers are highly important and the entrepreneurs mainly focus on this matter.

7. The results of analyzing the relationship among the variables of the guidelines for managing rubber processing into competition for sustainable existence after the improvement of the structural equation model revealed that the variable with the system of the effective network management for all upstream, midstream and downstream had the highest relationship with the management variable under the good governance principles with the standardized regression weight of .481. The management is the process implemented by the executives to achieve the organizational goals with the support of management employees and resources (Yaviratch, 2009). When considered in general, it was found that the management consists of three components: the process of consistent and relative operations, the commitment for the organizational achievement, and the integrated performance through human and resource management to achieve the organizational goals. When considered the management function, it was found that the management function consisted of: planning, organizing, leading and controlling. The organizations must have resources called “*inputs*”. When the resources are inputted into the process, it influences the efficiency of resource outputs. When considering the proper outputs, it is necessary to have both efficient inputs and management process. A diversity of both concepts and principles is implemented for the efficient organizational management to achieve the organizational success. One of the most important principles is the principle of good governance.

CONCLUSION

Guidelines for managing rubber processing into competition for sustainable existence were studied for the entrepreneurs to operate their business effectively and efficiently. The results of this study revealed that the important components for the sustainable rubber processing consisted of: resources, organization management, innovation, and market orientation.

For the manufacturing, the entrepreneurs must focus on the resources to enhance the quality of rubber processing and manufacturing process. The quality of rubber products was relatively low because the structure of rubber manufacturing of Thailand mainly consisted of the small holding rubber-based plantations with the insufficient income for living and this causes the lack of the plantation maintenance and the employees with expertise in tapping rubber trees. In general, the shortage of labor often occurs in the large rubber plantations and the farmers tend to hire foreign workers with low rubber tapping experience. This causes the problem of rubber tapping and the low quality of rubber products. Therefore, it is necessary to develop new methods with cooperation of farmers to produce the efficient products because most rubber farmers have knowledge and long experience in rubber plantations. If the appropriate technology is used, it increases the rubber productivity of the farmers without the enlargement of plantation sizes. The recruitment and selection of employees with knowledge and competency of the rubber products can enhance to the manufacturing capabilities.

At present, the business partners often consume the block rubbers which are cheaper than the ribbed smoked sheet rubbers and they can check the quality. Because Thailand mostly produces the block rubbers but the prices are still high because the raw materials of sheet rubbers with the crumb and waste rubbers are costly. Most industrial entrepreneurs of rubber products with experiences are Thai entrepreneurs of the small and medium enterprises with no investment support. This is one of the disadvantages of the business operators do not have the joined venture with foreigners who move to invest in Thailand. Finally, the quality of rubber manufacturing and exports of Thailand is not standardized because the rubber farmers produce the unsmoked sheet rubbers with a variety of quality and it has the shortage of modern quality evaluation tools. Therefore, the quality of the rubber is mostly evaluated by foreign quality institutions and it spends a lot of time and expenses. The quality problem must be solved to find the efficient ways of management.

The entrepreneurs enable to create the added value of the natural rubber of Thailand and compete with the foreign countries especially the rubber industry in Thailand because Thailand is the world largest producer of the natural rubbers with the sufficient raw materials. Besides the raw materials, there are other related industries involved in implementing the rubber products, such as chemicals and the efficient transportation systems. Therefore, the development of rubber industries to enhance the added value of the natural rubbers is a good opportunity and high probability to make more national income and also compete with the foreign countries. The government should mainly support the rubber industries for downstream effects.

Recommendations for Further Research

1. The research on the development of rubber industrial entrepreneurs should be studied to follow the guidelines more efficiently by assigning the training program courses with contents, training schedule, activities, update teaching materials and the evaluation tools for the development of rubber industrial entrepreneurs.
2. The specific type or size of organization should be studied and compared in more details to obtain the structural equation model or the multi-level analysis should be conducted including the individual and organizational factors personal and organizational factors to get the clearer results to better explain the rational factors because the organizational factors influence the individual factors.
3. The conceptual framework should be used to further study in the organizations with similar businesses, such as palm oil, food, textile industries and so on to verify the research results.

REFERENCES

- Agarwal, S.D. (2015). *The process of networked civic innovation: Examining the role of values, resources, and power in community-based technology projects*. Unpublished doctoral dissertation.
- Angkapong, S.O. (2010). *Management meaning*. Retrieved from <https://www.gotoknow.org>
- Armstrong, G. (2009). *Marketing: An introduction*. Pearson Education.
- Aryanto, R., Fontana, A., & Afiff, A.Z. (2015). Strategic human resource management, innovation capability and performance: An empirical study in Indonesia software industry. *Procedia-Social and Behavioral Sciences*, 211, 874-879.
- Banfield, P., Kay, R., & Royles, D. (2018). *Introduction to human resource management*. Oxford University Press.
- Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99-120.
- Barney, J.B., & Clark, D.N. (2007). *Resource-based theory: Creating and sustaining competitive advantage*. Oxford University Press on Demand.
- Chaudhary, S. (2016). *Effect of E-commerce on organization sustainability*.
- Davila & Sheldon. (2006). *Making innovation work*. New Jersey: Pearson Education Inc.
- Gillespie, Jeannet & Hennessey. (2010). Assessing advantage: A framework for firms, entrepreneurship theory and practice. *Winter*, 33-50.
- Giniuniene, J., & Jurksiene, L. (2015). Dynamic capabilities, innovation and organizational learning: Interrelations and impact on firm performance. *Procedia-Social and Behavioral Sciences*, 213, 985-991.
- Gripsrud, G. (1990). The determinants of export decisions and attitudes to a distant market: Norwegian fishery exports to Japan. *Journal of International Business Studies*, 21(3), 469-485.
- Hagedoorn, J., & Cloudt, M. (2003). Measuring innovative performance: Is there an advantage in using multiple indicators?. *Research Policy*, 32(8), 1365-1379.
- Heizer, J., Render, B., & Munson, C. (2017). *Operations management 12th ed.*
- Im2Market. (2015). *Management*. Retrieved 20 November 2018, from <https://www.im2market.com/>
- Lawson, B., & Samson, D. (2001). Developing innovation capability in organisations: a dynamic capabilities approach. *International Journal of Innovation Management*, 5(03), 377-400.
- Lynch, J. (2015). *Configuring the strategic orientation of manufacturing firms for economic sustainability: a study of the UK touring caravan industry*. Unpublished doctoral dissertation, Cardiff University.
- Mentzer, J.T., Min, S., & Bobbitt, L.M. (2004). Toward a unified theory of logistics. *International Journal of Physical Distribution & Logistics Management*, 34(8), 606-627.

- The Office of Industrial Economics. (2019). *Quantity of rubber products, dehydrated wood and wooded furniture of Thailand between 2018 and 2019*. Retrieved at 20th October 2019 from <http://www.oie.go.th/view/1/Home/EN-US>
- Paul Trott. (2012). *Innovation management and new product development*. Harlow: Prentice Hall.
- Rainey, H.G. (1999). Using comparisons of public and private organizations to assess innovative attitudes among members of organizations. *Public Productivity & Management Review*, 130-149.
- Robbins, S. P., & Coulter, M. (2003). *Management: 2003 update*. N.P.: Prentice Hall.
- Rubber Authority of Thailand. (2020). *Action plan and outcomes*. Retrieved at 20th August 2019 from <https://www.devex.com/organizations/rubber-authority-of-thailand-rat-121259>
- Silpcharu, T. (2020). *Research and data analysis using SPSS and AMOS*. Bangkok: Business Publishing R & D.
- Silpcharu, T., & Wantanakomol, S. (2017a). A structure equation modeling of guidelines for sustainable OTOP production management, using sufficiency economy theory. *International Journal of Applied Business and Economic Research*, 15 (22), 863-872.
- Silpcharu, T., & Wantanakomol, S. (2017b). A Structure equation modeling of guidelines for preventing corruptions in industrial business organizations. *International Journal of Applied Business and Economic Research*, 15(23), 469-477.
- Sittichai, K., & Pooripakdee, S. (2018). Organization management according to McKinsey's 7s framework that contributes to innovation organization case study: Organization awarded an excellent innovation organization. *E-Journal, Silpakorn University*, 11(3), 1419-1435.
- Skarzynski, P., & Gibson, R. (2008). *Innovation to the core: A blueprint for transforming the way your company innovates*. Harvard Business Press.
- Suliyanto, S., & Rahab, R. (2012). The role of market orientation and learning orientation in improving innovativeness and performance of small and medium enterprises. *Asian Social Science*, 8(1), 134.
- Tickle, M., Mann, R., & Adebajo, D. (2016). Deploying business excellence—success factors for high performance. *International Journal of Quality & Reliability Management*, 33(2), 197-230.
- Vracking, W.J. (1990). The innovative organization. *Long Range Planning*, 23(2), 94-102.
- Yaviratch, N. (2009). *Leadership and strategic leadership*. Bangkok: Triple Group Company Limited.