RELATIONSHIP BETWEEN PSYCHOLOGICAL FACTORS, INNOVATIVE PERFORMANCE, MARKETING CAPABILITY, AND ENTERPRENEURIAL SUCCESS AMONG THAI FRUIT AND VEGETABLE PROCESSING AND PRESERVATION SMEs IN THAILAND

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Article info

Abstract

An entrepreneur starts and runs a business through the pursuit of opportunities with the determination to use his/her knowledge, abilities, and experiences to effectively run his/her organization and with the resources at hand. He/she is a creative person who finds new approaches to market existing merchandise or better ways to improve and develop existing production processes to maximize the organization's benefits. He/she is willing to undertake a business venture in exchange for profits and satisfaction. These are the characteristics of a potentially successful entrepreneur. Entrepreneurial success is the primary goal of every entrepreneur, in the pursuit of which he/she must endure different kinds of problems to achieve this goal, and there are many ways to measure business success.

The aim of this study is to analyze the relationships between the psychological factors, innovative performance, marketing capability, and entrepreneurial success among Thai Fruits and Vegetables Processing and Preservation SMEs in Thailand. This is one of the first empirical studies to adopt the Giessen-Amsterdam Model of Entrepreneurial Success as the main research model with some added variables that may affect entrepreneurial

success identified from a literature review. Another research interest is the impact of the rising number of Thai Fruit and Vegetable Processing and Preservation SMEs entrepreneurs on global businesses due to increased quantities of imitation goods and services. The results of the study show that innovative performance, and marketing capability are highly related to entrepreneurial success. The developed strategies using innovative performance, and marketing capability drivers could help Thailand's SMEs entrepreneurs to be successful in a variety of industries.

Introduction

The fast-paced development of technology, combined with increased global competition and rapidly changing customer demands, implies that a business's competitive advantage is only temporary. Consumers expect continual improvements in the products/services offered, and so it is not surprising that innovation management has received a lot of research interest, particularly studies exploring the key managerial factors that lead to success or failure.

Innovation is a specific tool for entrepreneurs to create an advantage in terms of competitive business opportunities, and the success of a business depends on how the proponents of the execute any related changes to create opportunities and make a difference to the business. In general, entrepreneurship and innovation are reciprocal and entrepreneurs need to know how to apply the principles of successful innovation. (Drucker, 1985; Kanungo, 1999; Zhao, 2001).

Today, innovation and entrepreneurship have changed, and there are different ways of propagating, executing, and practicing these concepts around the world. Drucker (1985) believes that the practical reality is that entrepreneurship and innovation are not manifested in the same way locally as in the international marketplace, and in fact, they are not all systematic. For example, the US and China have incubators to breed innovation and entrepreneurship, but neither are practiced in the same fashion.

Large organizations have enormous innovation potential at their disposal. However, the innovation actually realized in successful products and services is usually only a small fraction of that potential. The amount and type of innovation a company achieves are directly related to the way it approaches, fosters, selects, and funds innovation efforts. To maximize innovation and avoid the dilemmas that mature companies face, entrepreneurs should complement the time-proven model of top-down innovation with its own brand of entrepreneurial innovation (Savoia & Copeland, 2011).

Recently, Thailand has entered the Association of Southeast Asian Nations (ASEAN) Economic Community (AEC), which is likely to open up business in the ASEAN countries and to make it easier to enter the international market. On the

other hand, the existing business risks stemming from competition as a result of the AEC has increased. Thus, Thailand needs to prepare and adapt to this by introducing policies and tools that encourage and stimulate economic growth simultaneously. In fact, encouraging new businesses and promoting entrepreneurship are parts of the mechanism that many other countries have adopted to create economic growth. (Kangwansupphaphan, 2014)

Thailand consistently exhibits one of the highest entrepreneurship activity rates in the world, and its established business ownership rate is the second highest globally. In 2013, 46.3% of the adult population in Thailand were involved in entrepreneurial activities, 18.3% started or were running new businesses and 28% were established business owners. In addition, one third of the adult population in Thailand is thinking about starting a new business within the next three years (Global Entrepreneurship Monitor Thailand Report, 2013).

Transcending the middle-income trap to become a high-income country is a great challenge for Thailand, which has maintained its status as a middle-income country for more than 37 years and could maintain this position as long as the following major problems are resolved: 1) low investment, 2) low wages in real terms, 3) no enhancement of the value to its very existence, 4) no creation of new cities and industrial clusters, 5) insufficient production workers with the skills and knowledge to meet the needs of the market, and 6) inefficient energy infrastructure (Thailand Future Foundation, 2013).

Food productions businesses involve fruit and vegetable sorting, canning, and juicing (Department of Business Development, 2018).

In 2017, there were on average 12 new fruit and vegetable businesses established each month, while there were 28 -in January 2018 (an increase of 133.3% or 2.3 times), most of which were wholesale (23; 82.2%), followed by juicing (3; 10.7%) and sorting (2; 7.1%). The yearly trend of increasing numbers of new fruit and vegetable businesses established in 2018 is to support the increasing demand for healthy food among the elderly due to the structure of the Thai population becoming older (an aging society) as well as teenagers and workers who are paying more attention to health.

The total registered capital is 22.84 billion baht, divided into limited companies (20.421 billion baht; 89.4%), limited liability/ordinary partnerships (354 million baht; 1.6%), and public limited companies (2.065 billion baht; 9.0%). There are 1,625 companies with registered capital of not over 5 million baht (87.5%), 168 with more than 5 million baht but not over 100 million baht (10.0%), and 46 with more than 100 million baht (2.5%); 38 (82.6%) of the latter businesses mainly carry out fruit and vegetable canning and juicing or 82.6% using technology and machinery as an important role in the production process, which requires a larger investment than wholesale fruit and vegetable businesses. The sorting of fruit and vegetable is mostly carried out by small to medium enterprises (SMEs).

The increasing demand for tropical fruit in the global marketplace has attracted foreign investment, especially from China which is the large importer of fruit from Thailand. However, foreign

investment in agricultural-related businesses should be supervised by the Thai authorities to prevent China from influencing and determining the prices of Thai fruit and vegetable. In addition, the economic situation in Thailand and the World is improving. Moreover, the Thai government is supporting Thailand to become the number one fruit exporter in the world, which should result in fruit-related businesses having the opportunity to expand their markets, and has contributed toward the increasing trend of new fruit and vegetable SMEs being established since 2017.

SMEs entrepreneurs should consider the main factors affecting entrepreneurial success: 1) human capital, 2) entrepreneurial orientation, 3) marketing capability, and 4) innovative performance (Byers, Dorf and Nelson, 2011). However, only a few of these factors have been empirically studied and the effects of innovative performance still remain unsolved. Therefore, the study of the relationships between psychological factors, innovative performance, marketing capability, and entrepreneurial success among Thai Fruit and Vegetable Processing and Preservation SMEs in Thailand was conducted.

Objectives of the study

Primarily, the purpose of this study is to test a more comprehensive model consisting of Human Capital, Entrepreneurial Orientation, Marketing Capability, Innovative Performance, and Entrepreneurial Success in the context of Thai Fruit and Vegetable Processing and Preservation SMEs.

Operational definitions

In this study, the psychological factors include human capital and entrepreneurial orientation.

Literature review

Entrepreneurial success

Definition/description of entrepreneurial success

A General Model of Entrepreneurial Success Fig.1 presents the general model that we have worked from (the Giessen-Amsterdam model of entrepreneurial achievement). It is an interdisciplinary model, as it contemplates most territories that have been examined in business inquire about.
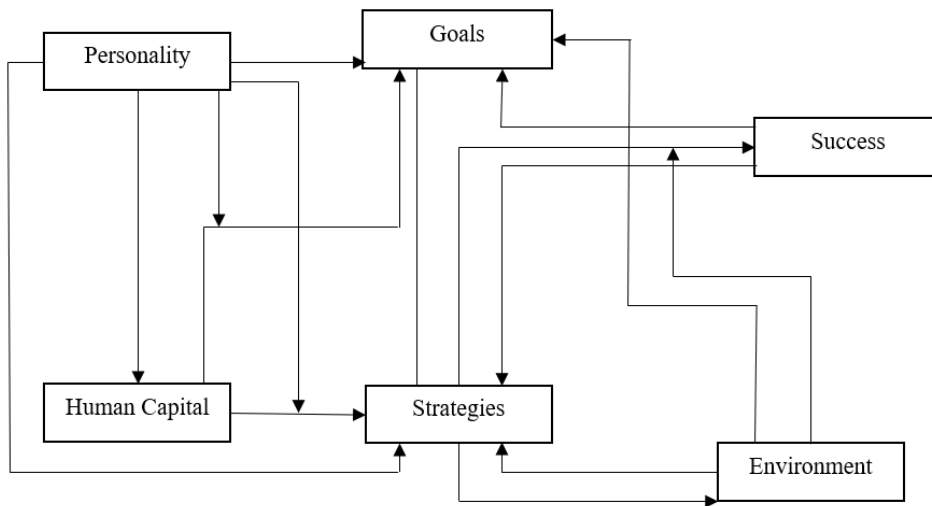
Figure1 Giessen-Amsterdam Model of Entrepreneurial Success

In the business sense of the word "success" is to reach the goal, which means the need to target in order to find success.

In psychology, Dr. Michael Frese (Frese, 2000, p.115), the definition of entrepreneurial success means being able to achieve its business objectives or results relied satisfied.

In addition, Drucker (2002, p.18-21) has also proposed "Indicators" of success in business strategic goals by identifying the "Key Variables" or "Major Result Areas" are the following.

1. Market Position is measured by targets and achieving the position of marketing "Market Standing" market share "Market Share", the current market and new markets as well as new products and services aimed at the building customer loyalty.

2．Quality is maintaining and improving the quality of products and / or services.

3. Innovation has effectiveness in achieving the level of development of new products and services, including new processes, which means skills and activities that would be necessary to increase the performance of the company in a competitive and sustainable in the long term.

4. Socially responsible behavior, including the cherished love for ethics and social responsibility in areas such as participation in preserving the environment and overall quality of life and so on.

5. Human resources are recruitment, development, and maintenance of human resources at all levels to provide high-quality, knowledge, abilities, skills, and attitudes, as well as employee relations and relations with labor unions (if any).

6. Financial resources are the recruitment, retention, and management of financial resources appropriately.

7. Physical resources are to supply, build, and maintenance of physical resources such as buildings, plant, machinery, equipment, and technology needed to run the business and used appropriately.

8. Cost-efficiency, the using resources are used as efficiently as all kinds of companies to produce goods and / or services with low cost.

9. Profitability profit levels must be reasonable and not exorbitant and other index indicator that represents a good financial position.

The "Major Result Areas" in the ninth as the above may be divided into three groups together.

1. Strengthen the capacity of the market is composed of four variables, market position, develop and maintain quality, innovation, and social responsibility.

2. Group Management consists of three variables: human resources, financial resources, and physical resources.

3. The economy group is comprised of two variable cost efficiencies and profitability.

It can be seen that the criteria for determining the success of the diverse approaches which need to be taken into account for the decision to adopt by Michael Frese, who studied with the operator panel which offers a way to measure entrepreneurial success by using four criteria to consider together.

1. Entrepreneurs assess their success will be seen in the financial business and customer satisfaction is reflected by the earnings from the business.

2. Measured by economic considerations, business information, including an increase or decrease in the number of customers, profitability and sales in the last one or two years.

3. A questionnaire with images of Beuedert, Presisdoefer & Ziegler to measure the overall business outlook, which will allow operators to evaluate the success of the business over the past year that have characterized the changes in the overall picture, however.

4. Interviewers will evaluate the overall success rate of households into five levels, namely the one that refers to a successful second level refers to the relatively unsuccessful third level refers to succeed fourth means quite successful and level five being successful interviewers to assess success by combining observations from the interviewer.

From the information above, it was the definition of success is that success means being able to conduct business with the goal or result is satisfactory, as measured by trends of earnings, the trend in the number of customers, prospects, sales, trends. overall, the satisfaction of the views of others, the satisfaction of accomplishment when compared to its competitors, customer satisfaction as a business owner, satisfaction, revenue, number of employees at present, data for machinery and equipment if it is sold and evaluated by the interviewees. In this study assesses the success of the deal, according to the concept of Michael Frese (2000) as a basis for research.

Factors that affect entrepreneur's growth and success

The important factors that have the impacts on an entrepreneur's growth and success are as follows (Eggers, 1999, pp. 76-81):

1. Ability to create competitive advantage and market size. Creating competitive advantage is one of the factors of an organization's success. This depends on following factors: appropriate market size, time limitation of the competitive advantage, and shelf life.

2. Psychological characteristics. An entrepreneur's ability to adapt himself to any situations depends on five essential psychological characteristics: desire to be independent; tolerance to risk; passion to be successful; desire to have social influences or social motivation; and desire to be a moral authority.

3. Management skills. The important management skills are: the ability to create and manage the changes; the ability to create an efficient organization; and the ability to be supportive.

4. Organizational culture that encourages growth. Essential organizational culture consists of: paying attention to the subordinates and rewarding them for their distinct works; being attentive to the customers' needs; and having a determination to maintain the existing organizational culture.

Evaluating entrepreneurial success

Kaplan and Norton (Kaplan & Norton, 1992, pp. 71-79) state that the traditional way to measure business success primarily focused on money.

Frese (Frese, 2000) indicates that the use of the overall evaluation to assess the entrepreneurial success is very useful since the results do not solely rely on the entrepreneur's opinion.

Gunday et al. (2011) defined the definition and measured entrepreneurial success by considering the following indicators: 1) Financial Performance, 2) Production Performance, and 3) Market Performance from 1 = Unsuccessful to 7 = Extremely successful to make it easier to understand (Figure 2).
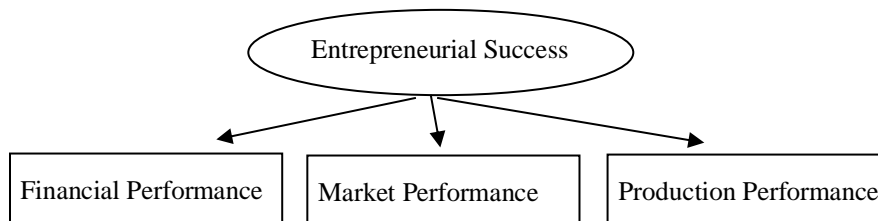
Figure 2 The measurement of entrepreneurial success

Source: Gunday et al., 2011.

Human capital

Concept of human capital

In 1985, Bates found that the effect of the survival of minority businesses, there are limits to the practical management of complex credit and capital. It has been in education and training the study of social attitudes about the role of minorities and directing what entrepreneurial

minorities. The study on the characteristics of entrepreneurs seeking higher profits compared with minorities including the business practices of the minority group's Northern League's business and personal services, with influence from traditional business activities of enterprises minorities.

General human capital independent variables

To evaluate general human capital, three things were utilized to decide the experience and training of the innovation business people. Expansiveness of experience was measured utilizing a thing that scrutinized the quantity of businesses the business visionary had worked for. To quantify the profundity of experience, the quantity of years of expert work experience was asked. The instruction thing utilized an ordinal scale and asked for the respondents' largest amount of training. The scale included secondary school, relate degree, four-year college education, graduate degree, and PhD.

Construction of the specific human capital independent variables

There were at first five things for each earlier information sort particular to the time the open door was initially perceived. Taking after everything, two Likert-type response scales were incorporated, one that tended to the measure of earlier information and a moment that asked about its significance

to seeing the open door. The sum reaction scale utilized a 5-point Likert-type scale and the significance reaction scale utilized a 3-point Likert-type scale. Opportunity acknowledgment was thought to be a component of both a man's supply of information (Ronstadt, 1988; Shane, 2000) and a man's readiness (Kirzner, 1973) to that learning. The scale included (1) approaches to serve markets, (2) client issues, (3) markets, and (4) innovation.

Human capital and entrepreneurial success

Jens M. Unger et al., 2009, they examined meta-scientifically coordinates comes about because of three many years of human capital research in business. In light of 70 free examples (N=24,733), they found a critical yet little relationship between human capital and achievement (rc=.098).

When studying the definition and measurement of human capital, we need to take the definition and measurement of human capital into consideration. The human capital of an entrepreneur can be related to the following indicators: 1) start-up/ owner experience, 2) industry-specific experience, 3) management experience. 4) business education, 5) a parent who is an entrepreneur, 6) work experience, and 7) education level (Unger, Rauch, Frese and Rosenbusch, 2011). These relationships are presented in Figure 3.
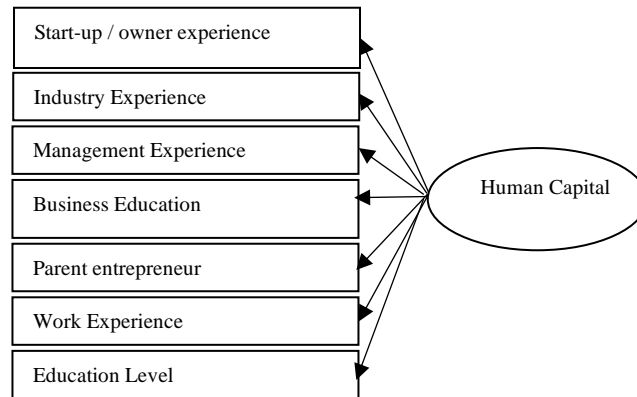
Figure 3 The measurement of human capital

Entrepreneurial orientation

The conceptual of the entrepreneurial orientation (EO)

McClelland (1987: p.254-255) the concept of Entrepreneurial Orientation (EO) showed that the successful entrepreneurs who are keen on the look of success. Entrepreneurs who are keen to contribute to the success of high interesting and ability to do business better.

The conceptual of Lumpkin and Dess (1996, p.138-153) explained that the strategic of management with the performance of the entrepreneurs involved in the management process, decisions and actions at levels consistent static. The Entrepreneurial Orientation is a key ingredient for a successful organization. The EO is a deviation of the characteristics from the norm. But also, the behavior of the values that were ingrained habit before an entrepreneur.

The Entrepreneurial Orientation, the innovative concept of support Miller

(1983, p.771) which explains the creation of an innovation-oriented activities in marketing innovative products. The results of operations of the strategic analysis and interpretation study of Miller (1987, p.17) explained that the company will determine the cost of research and development as a percentage of sales made.

Michael Frese (2000, p.18-19) has presented the Giessen-Amsterdam Model of Entrepreneurial Success, Figure 1

This figure shows the relationship of the personality of the entrepreneur, human capital, goals, environment, and strategies that deliver success in the business.

After 2000, the concept is consistent with the entrepreneurial orientation takes risks of Sharma (2003. p.60-61). He has proposed that the entrepreneurs are expected to have certain attitudes and values that show entrepreneurial behavior. Behavioral trends related to values and characteristics of

entrepreneurs. And Neal (2000, p.223) argued that the personality of the entrepreneur is more likely the business is quite good entrepreneur should have a consistent look to the personality of the entrepreneur's character including autonomy and achievement.

In this study, the five factors of the entrepreneurial orientation are taken from Frese (2000), as discussed earlier: 1) Risk-taking, 2) Innovativeness, 3) Proactiveness, 4) Competitive Aggressiveness, and 5) Autonomy. Evaluation is on a Likert scale as presented in Figure 4.
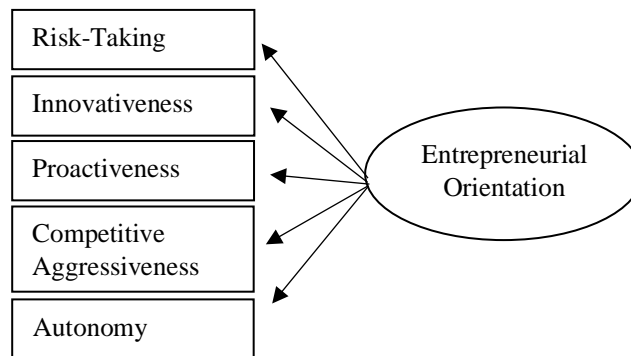

Figure 4 The measurement of entrepreneurial orientation

Linking entrepreneurial orientation and marketing capabilities

In concern with the resource-based line of reasoning, entrepreneurial orientation as an asset has potential worth. The ownership of entrepreneurial orientation is an essential yet inadequate condition for esteem conveyance (Barney, 1991). A firm needs to undertake key activities to profit from innovation (Lisboa et al., 2011). The capacity by which the firms' assets are set clarifies a resource-based view of the firm as opposed to the straightforward heterogeneity of the firms' assets (Eisenhardt & Martin 2000; Morgan et al., 2009).

Martin and Javalgi (2016) researched the moderating role of competitive intensity

on entrepreneurial orientation, marketing capabilities, and business performance among Latin American-based new international ventures. Their findings highlight the moderating role of competitive intensity between entrepreneurial orientation and marketing capabilities for better new international venture performance. These have important implications for the decisions of international entrepreneurship scholars and practitioners about entrepreneurial orientation allocation to enhance the required marketing capabilities for new international ventures' increased performance. Therefore, entrepreneurial orientation is positively related to marketing capability, as presented in Figure 5.
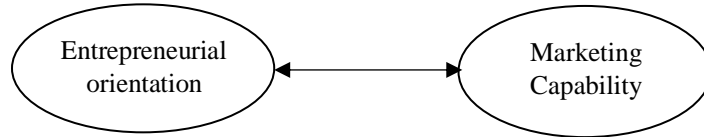
Figure 5 The relationship between entrepreneurial orientation
and marketing capability

Marketing capability

Vorhies and Neil (2005) suggested that market-based organizational learning is recognized as an essential source of sustainable competitive advantage. One specific learning system, benchmarking, is a generally utilized management tool that has been perceived as fit for distinguishing and improving important promoting capacities. In spite of across the board reprimanding of administrators, the benchmarking of showcasing capacity as a course toward feasible focused advantage has received meager experimental consideration.

Linking marketing capabilities and business performance

Each Marketing Capability is emphatically and straight forwardly identified with firm execution, indicating that these marketing capabilities are sources of competitive advantage and are therefore appropriate targets for benchmarking. He information additionally bolster the second-arrange figure speaking to relationship among the eight showcasing capacities, and we find that this showcasing ability interdependency element is firmly and decidedly connected with firm execution. Besides, the circuitous ways connecting every marketing ability with firm

execution by method for advertising capacity reliance are more grounded than the immediate ways from every promoting ability to firm execution. These shows in outlining benchmarking forms for the organizations in our example, these promoting abilities ought to be benchmarked as a set.

1) Marketing strategy

Kyriakopoulos and Moorman (2004) studied tradeoffs in marketing exploitation and exploration strategies: They argue that marketing strategy can improve a firm's present aptitude (marketing exploitation strategy) and additionally requires the development of new information and abilities (marketing exploration strategy). Research in strategy and organizational learning proposes that using the two methodologies can affect firm adequacy in individual territories and decrease the firm's budgetary execution.

2) Marketing communication

Pfeffermann (2011) described marketing communication as the cross-functional dynamic capability of: strategies for organizations and networks. He found that "diffusion research seeks to understand the spread of innovations by modeling their entire life cycle from the perspective of communications and
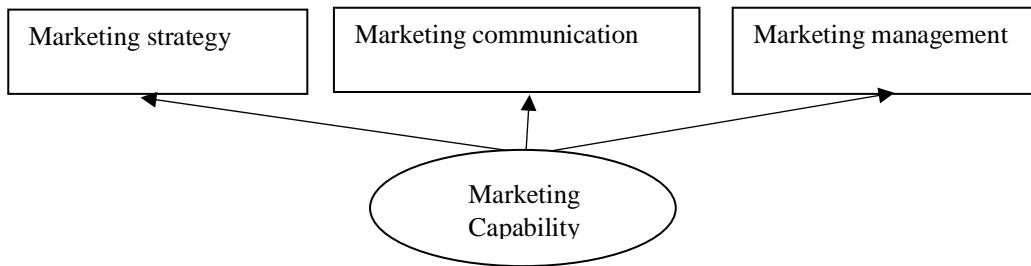
consumer interactions." (Peres et al., 2010, p. 91).

3) Marketing management

Day (1994) studied the capabilities of market-driven organizations and argues that significant advancement has been made in recognizing market-driven organizations, understanding what they do, and estimating their primary concerns of their direction of their business sector. Developing abilities is a way to deal with key administration when combined with

all out-quality administration that offers a rich showcase of approaches to configuration change programs that will upgrade a market direction. The most particular highlights of market-driven associations are their authority in market detecting and client connecting abilities.

Each entrepreneur may have principles and methods about the characteristics of different entrepreneurs. The evaluation was carried out using a Likert scale in Figure 6.

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┌─────────────────────┐   ┌──────────────────────────┐   ┌──────────────────────────┐
│ Marketing strategy  │   │ Marketing communication  │   │  Marketing management    │
└─────────────────────┘   └──────────────────────────┘   └──────────────────────────┘
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Figure 6 The Measurement of Marketing Capabilities

Linking marketing capabilities and innovative performance

Rajkovič and Prašnikar (2009) studied technological, marketing, and complementary competencies driving innovative performance of Slovenian manufacturing firms. They found that the innovative performance of the firms relied on underlying capabilities, in particular mechanical, marketing, and

integral. Abilities are regarded as systems of various capabilities and other firm resources and can be utilized for cross-industry comparisons.

From these studies, it is evident that the marketing capability of an entrepreneur influences the effectiveness of innovative performance on the success of his/her business, as presented in Figure 7.
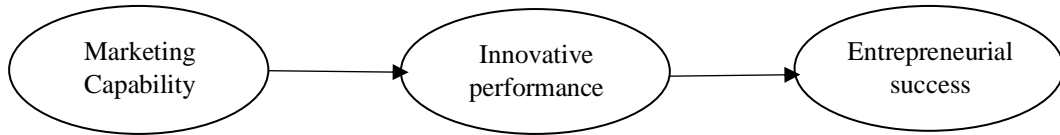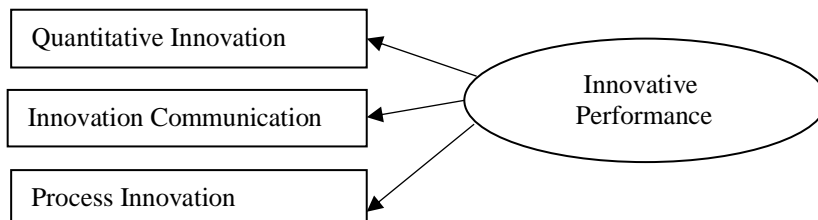
Figure 7 The relationship between marketing capability, innovative performance, and entrepreneurial success

Innovative performance

Gurhan (GUNDAY et al., 2011) found that the innovative performance is the measurement of the level of achievement of innovative performance items in the business or organization in the last three years compared to the previous years. They have 7 items for measured; ability to introduce new products and services to the market before competitors, percentage of new products in the existing product portfolio, number of new product and service projects, innovations introduced for work processes and methods, quality of new products and services introduced, number of innovations under intellectual property protection, and renewing the administrative system and the mind set in line with firm's environment.

Innovative performance in this research is considered using the following indicators: 1) Quantitative Innovation, 2) Innovation Communication, and 3). Process Innovation. The principles and methods about the characteristics of each entrepreneur were evaluated using a Likert scale as presented in Figure 8.
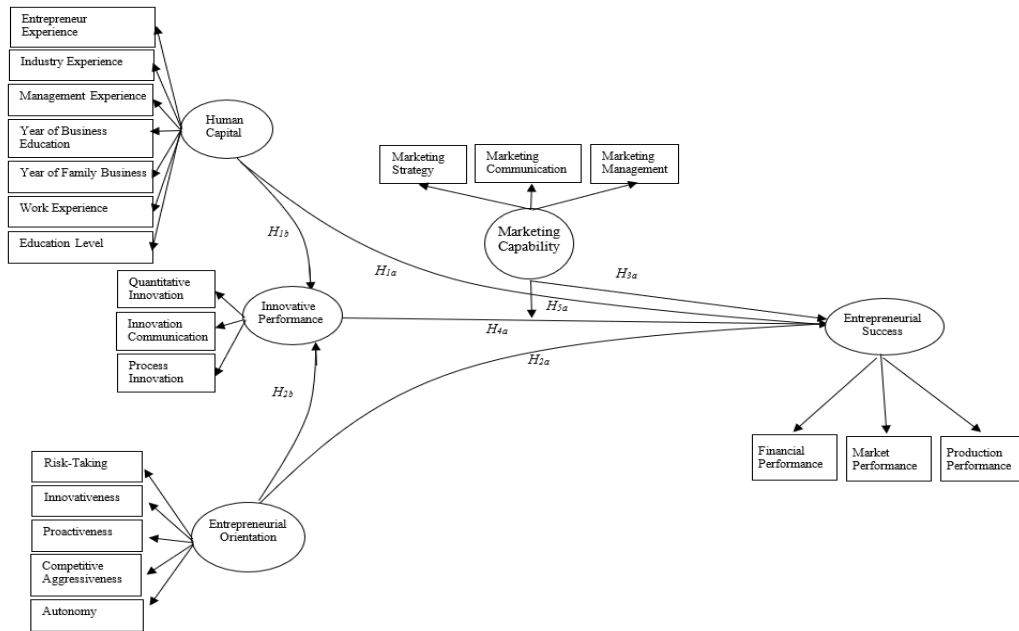

Figure 8 The measurement of Innovative Performance

Conceptual framework

This is based on the relationships between Psychological Factors, Innovative Performance, Marketing Capability and Entrepreneurial Success among Thai Fruit and Vegetable Processing and Preservation SMEs in Thailand (Figure 9).

Figure 9 Conceptual framework: "Relationships between psychological factors, innovative performance, marketing capability, and entrepreneurial success among Thai fruit and vegetable processing and preservation SMEs in Thailand"

Research design

Quantitative research methods by collecting survey data and using self-response questionnaires as a tool for data collection were used in this research. Details of the questionnaire can be found in Appendix B. A qualitative method was used to verify the definition and scope of each construct in the research model.

Quantitative methodology was applied in this study and used to statistically test and confirm the relationships between the constructs. It was also used to verify the research model with statistical support for the results from the preliminary study and the concepts from the literature review. The research steps concluded from the literature review are depicted in Figure10.
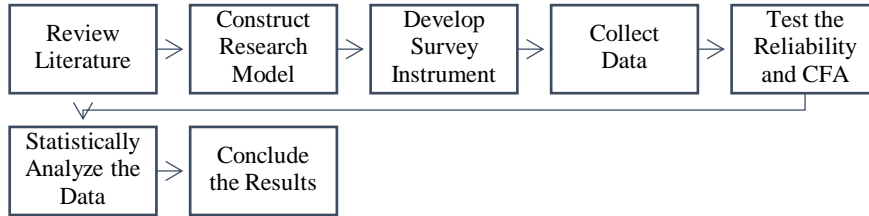
Figure 10 Research methodology (CFA, Confirmatory Factor Analysis)

The study population comprised a total of 8,272 SMEs (Office of SME Promotion (OSMEP), 2016) that process and preserve fruit and vegetable in Thailand in 2015.

Data were collected by field surveying via questionnaires between April 30 and June 1, 2019. A simple randomization plan using the raffle method was used on a list of operators obtained from the National Statistical Office until a total of 576 sample units by means of telephone and field interviews had been collected.

The power of the statistical test and the suitability index of the structural equation model according to the research of MacCallum, Browne and Sugawara (1996) were applied to the sample.

1) $\varepsilon_0 = 0.05$ and $\varepsilon_a = 0.08$, where ε_0 and ε_a are the null and alternative values of the root mean square error of approximation (RMSEA) to measure the suitability of the model used to calculate the sample size.

2) The power of the statistical test $= 80\%$ $(1 - \beta = 0.80)$.

3) Confidence interval $(\alpha) = 95\%$

4) The number of degrees of freedom for the original model was calculated using this formula (Raykov & Marcoulides, 2006, p. 36):

$$df = \frac{v*(v+1)}{2} - p,$$

Where df is the number of degrees of freedom, v is the number of variables (24), p is the number of estimated parameters (69). Therefore, $df = 231$.

From the sample size finding table (MacCallum, Browne and Sugawara, 1996), it was found that if the number of degrees of freedom is greater than 100, the minimum sample unit size should be 132 units. A small sample size may cause problems with maximum likelihood estimation (inconsistency) and high discrepancy. Therefore, to ensure that there were enough sample units, the sample size of this study was 576 respondents.

Instrument development

The main instrument used in this study comprises questionnaire. This is one of the most effective research instruments used in generating a large amount of primary data for a research study. However, to ensure that the questionnaire was well-designed and structured, the response errors were minimized by conducting a pretest. Another reason for performing the pretest was to check the reliability of the questionnaire. After the pretest had been completed, the questionnaire was revised before being answered by the real respondents. All

measurement items on the questionnaire were adapted from existing studies base on their reliability and relevance to this study.

The English-version questionnaire was translated into Thai by following the back-translation procedure, the purpose of which was to ensure that the Thai respondents could understand the same meaning as in the English-version questionnaire. To conduct the back-translation procedure, a skilled Thai translator translated the questionnaire from English into Thai, and then another English-speaking translator blinded to the questionnaire translated it back into English again. The two versions of the English-language questionnaire (before translation into Thai and after translation back into English) were evaluated and compared and found to be indistinguishable in term of their meaning, After the translation had been completed, the final Thai-version questionnaire was then pretested to ensure that the respondents fully understood all of the questions.

Measurement

The variables used in the study were assessed via Likert's (1932) Summated Rating Scale by adding the relevant question scores. The scores of questions posed in the opposite logical direction were reversed before including them. The questions were analyzed to determine the quality of the variables and whether there were enough of them. Reliability testing was performed using Cronbach's Alpha coefficient: scores of greater than 0.60, a correlation coefficient value between individual scores and the total score (Corrected Item

Total Correlation (CITC)) greater than 0.20, and an exploratory factor analysis to determine whether the group of questions can be combined into one dimension (unidimensionality) were applied to the questionnaire.

Problematic questions were removed from the questionnaire, after which the latter was re-analyzed to determine whether the above statistics were sufficient to obtain a one-dimensional question set.

The unit of this study were the individuals SME entrepreneurs categorized into groups according to the treatment those respondents were randomly assigned. Babbie (2010) stated that individuals are the most typical units of analysis. He also mentioned that "Social researchers tend to describe and explain social groups and interactions by aggregating and manipulating the descriptions of individuals."

In this study, there relationships between three independent variables: including Human Capital, Marketing Capability, and Entrepreneurial Orientation; one mediating variable: Innovative Performance; and one dependent variable: Entrepreneurial Success were measured. The measurement of these variables was adapted from the previous literature.

All items were measured by using a seven-point Likert scale where 1 represents "Strongly Disagree" to 7 which represents "Strongly Agree".

The results of the Cronbach's Alpha, Construct Reliability, Average Variance Extracted, Maximum Shared Variance, and Average Shared Variance (Fornell & Larcker, 1981; Hair, Black, Babin, & Anderson, 2010; Essmui, Berma,

Shahadan, Ramlee, & Mohd, 2014) are presented in Table 1.

From the initial data analysis of the model, it was found that there was a collinearity problem with the observed variables (Entrepreneurial Success, Entrepreneurial Orientation, Marketing Capability, and Innovative Performance). Hence, these were grouped by using the information from the literature review and a parceling method to analyze this problem (Little, Shahar, & Widaman, 2002).

Table 1 The statistical results for analysis of the variables in the study

Variables	Alpha	CR	AVE	MSV	ASV
1. Human Capital	**0.835**	**0.871**	**0.580**	**0.008**	**0.004**
2. Entrepreneurial Orientation	**0.906**	**0.840**	**0.520**	**0.225**	**0.109**
2.1 Risk-taking	0.697				
2.2 Innovativeness	0.797				
2.3 Proactiveness	0.792				
2.4 Competitive Aggressiveness	0.858				
2.5 Autonomy	0.876				
3. Innovative Performance	**0.876**	**0.873**	**0.698**	**0.486**	**0.206**
3.1 Quantitative Innovation	0.713				
3.2 Innovation Communication	0.794				
3.3 Process Innovation	0.662				
4. Marketing Capability	**0.982**	**0.943**	**0.847**	**0.486**	**0.199**
4.1 Market Strategy	0.947				
4.2 Market Communication	0.924				
4.3 Market Management	0.977				
5. Innovative Performance*Marketing Capability	**0.908**	**0.844**	**0.648**	**0.088**	**0.033**
5.1 Quantitative Innovation* Market Communication	0.712				
5.2 Innovation Communication* Market Strategy	0.789				
5.3 Process Innovation* Market Management	0.571				
6. Entrepreneurial Success	**0.924**	**0.910**	**0.773**	**0.269**	**0.132**
6.1 Financial Performance	0.773				
6.2 Market Performance	0.805				
6.3 Production Performance	0.888				

Note: Alpha, Cronbach's Alpha; CR, Construct Reliability; AVR, Average Variance Extracted; MSR, Maximum Shared Variance; ASR, Average Shared Variance.

Data analysis

Structural equation modeling, a multivariate statistical technique that combines aspects of factor analysis and multiple regression, was applied in the data analysis. It is capable of

simultaneously of simultaneously dependent relationships between measured variables and latent constructs (Hair et al., 2006). This statistical technique provides researchers with comprehensive methods for assessing and modifying theoretical models, and thus is suitable for testing and developing theories in the social sciences (Anderson & Gerbing, 1988). The following tests were performed for hypotheses testing in this study using IBM SPSS Statistics and IBM SPSS AMOS:

1) Cronbach's Alpha test to identify the dimensionality and reliability of the instruments being examined.

2) A Confirmatory Factor Analysis to provide confidence that the theoretical model fits with the empirical data.

3) The hypotheses based on the significance levels of path coefficients obtaining from the path analysis.

Examining the suitability of the relationship model can be considered in many ways, such as checking the variance tolerance, consideration of the fitted indices of the model, etc.

Examples of the model suitability indices are reported in Table 3.7, which show that each suitability index has different advantages and disadvantages, making it difficult to tell which one is the best. In addition, there are other methods for testing the suitability of a model, such as considering that the standard residual value should be in the range [-19.6, 1.96], etc.

Table 2 Examples of model suitability indexes

Index	Equation	Constraints
Minimum fit function (x^2)	$(N-1)F_{under-ML\ or\ GLS}$	1. Should have a low value.
(Bentler and Bonett, 1980)	N = Sample Size	2. Every variable must have a
	F = Fitted Function under ML or GLS;	normal variable multivariate.
	ML = Maximum Likelihood	3. Sensitive to relationships - The stronger the relationship line, the lower the x^2 value.
	GLS = General Linear Least Squares	4. Sensitive to sample size - the smaller the sample size, the lower the x^2 value.
Root Mean Square Error of Approximation (RMSEA,ε) (Joreskog and Sorbom, 1984)	$\sqrt{\dfrac{F}{df_m}} = \sqrt{\dfrac{\dfrac{\delta_m}{N-1}}{df_m}}$	1. Should have a low value (around 0.05).
	$\delta_m = RMSEA\ of\ Model$	2. Cut the effect from the sample size.
	$df_m = Degrees\ of\ Freedom$	3. Make the body simple, the most compact.

Adapting the model by increasing or decreasing the number of parameters affects the estimation of the statistics and the suitability index. Therefore, model adjustment is usually carried out to improve its suitability index. Adaptation depends on the context of the research, possible theories, and reasoning, which are the most important. The effects or relationships that occur are explained rather than adjusted to improve the statistical values.

Results of the research hypotheses testing

The data collected from the Thai Fruit and Vegetable Processing and Preservation SMEs were merged and migrated to IBM SPSS Statistics and IBM SPSS AMOS to perform the main data analysis, Structural Equation Modeling (SEM). First, confirmatory factor analysis (CFA) was conducted to verify the reliability of each measurement instrument. Second, a preliminary model was constructed and then carefully adjusted to be optimal. Third, the proposed model was statistically analyzed with SEM methodology and was proved to be a fit with the data.

Hypothesis testing was performed by using the maximum likelihood estimation technique. The results show that GFI (.918), AGFI (.881), NFI (.939), and CFI (.950) all exceed the cutoff value, while CMIN/DF (4.969) and RMSEA (.083) met the recommended threshold criteria.

In detail, these paths can be explained as follows:

H1a: Human Capital significantly affects Entrepreneurial Success

The statistical analysis of SEM clearly demonstrates that there were no statistically significant effects between human capital and entrepreneurial success. Therefore, H1a is not supported, and so this construct was removed from the final model.

H1b: Human Capital significantly affects Innovative Performance

The statistical analysis of SEM clearly demonstrates that there were no statistically significant effects between human capital and innovative performance. Therefore, H1b is not supported and so this construct was removed from the final model.

H2a: Entrepreneurial Orientation significantly affects Entrepreneurial Success

The statistical analysis of SEM clearly demonstrates that there were no statistically significant effects between entrepreneurial orientation and entrepreneurial success. Therefore, H2a is not supported.

H2b: Entrepreneurial Orientation significantly affects Innovative Performance

The statistical analysis of SEM clearly demonstrates that entrepreneurial orientation had a statistically significant effect on innovative performance (path coefficient = .12, p<.05). Therefore, hypothesis H2b is supported.

H3: Innovative Performance significantly affects Entrepreneurial Success

The statistical analysis of SEM clearly demonstrates that innovative

performance had a statistically significant effect on Entrepreneurial Success (path coefficient = .31, p<.001). Therefore, hypothesis H3 is supported.

H4a: Marketing Capability significantly affects Entrepreneurial Success

The statistical analysis of SEM clearly demonstrates that Marketing Capability had a statistically significant effect on entrepreneurial success (path coefficient = .30, p<.001). Therefore, hypothesis H4a is supported.

H5a: Marketing Capability moderates the effects of Innovative Performance on Entrepreneurial Success

The statistical analysis of SEM clearly demonstrates that Marketing Capability did not moderate the effects of Innovative Performance on Entrepreneurial Success. Therefore, H5a is not supported and so this construct was removed from the final model.

Table 3 Results summary

Research Hypothesis	Empirical Support
H1a: Human Capital significantly affects Entrepreneurial Success	✘
H1b: Human Capital significantly affects Innovative Performance	✘
H2a: Entrepreneurial Orientation significantly affects Entrepreneurial Success	✘
H2b: Entrepreneurial Orientation significantly affects Innovative Performance	✔
H3a: Innovative Performance significantly affects Entrepreneurial Success	✔
H4a: Marketing Capability significantly affects Entrepreneurial Success	✔
H5a: Marketing Capability moderates the effects of Innovative Performance on Entrepreneurial Success	✘

The interpretation condition must be viewed from the research conceptual framework (figure 9) and, if the results are not statistically significant, they are eliminated from the model as shown in Table 3 and figure 11.

Table 3 contains the research results based on the proposed hypotheses and the results from the empirical evidence. It shows that there is an indirect relationship through Innovative Performance on Entrepreneur Success (H2b), Innovative Performance significantly affects Entrepreneurial Success (H3a), the construct Marketing Capability, significantly affects Entrepreneurial Success (H4a), and the other hypotheses are not statistically significant.
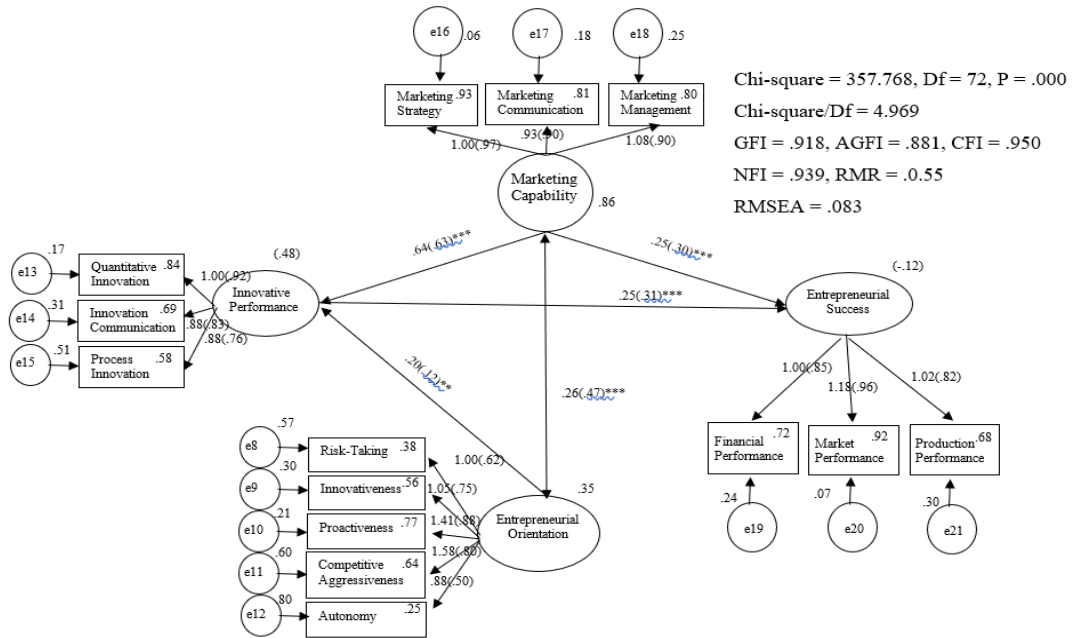
Figure 11 Results of the final structural equation model – Unst.(St.)

Conclusions

The following is a theoretical conclusion related to this research. In this research, the differences were found between the structural equation model of conceptual framework to the improvement of the final structural equation model, which helps to explain the overall of both models that have changed. how can be classified according to the hypotheses:

The Human Capital construct had no statistically significant effects on Entrepreneurial Success (H1a), which means that the former does not directly relationship the latter. Moreover, it can be observed that Human Capital had no statistically significant effects on Innovative Performance as well (H1b), which leads to the conclusion that Entrepreneurial Success was the same as

Entrepreneurial Orientation in that neither has a direct relationship on Entrepreneurial Success (H2a). However, there is an indirect relationship through Innovative Performance on Entrepreneur Success (H2b). As in the Giessen-Amsterdam Model of Entrepreneurial Success (Frese et al., 1998), Entrepreneurial Orientation helps businesses to succeed in the context of the Thai Fruit and Vegetable Processing and Preservation SMEs when considering the relationship of the indirect factor, Innovative Performance on Entrepreneurial Success.

Innovative Performance significantly affects Entrepreneurial Success (H3a). This is in agreement with Gunday et al. (2011) who found that innovative performance is a measurement of the level of achievement of a business or

organization as it has an impact on entrepreneurial success.

Finally, the last construct Marketing Capability, significantly affects Entrepreneurial Success (H4a) but does not moderate the effects of Innovative Performance on Entrepreneurial Success (H5a). This means that relationships with Marketing Capability directly affect Entrepreneurial Success. Similarly, Vorhies and Neil (2005) stated that when linking marketing capabilities and business performance, each marketing capability is emphatically and straight-forwardly identified with firm execution, indicating that they are sources of competitive advantage and are thus appropriate targets for benchmarking.

The Final Structural Equation Model shows that there is positive correlation between Entrepreneurial Orientation and Marketing Capability, which corresponds to the findings of Martin, and Javalgi's (2016) research into entrepreneurial orientation, marketing capabilities, and performance; they discovered the moderating role of competitive intensity between entrepreneurial orientation and marketing capabilities for better new international venture performance.

There is a positive relationship between Marketing Capability and Innovative Performance which is similar to Lee and Hsieh (2010) who studied the relationships between entrepreneurship, marketing capability, innovative capability and sustained competitive advantage. The empirical results show that entrepreneurship directly relationships marketing capability, innovative capability, and sustained competitive advantage and indirectly relationships sustained competitive

advantage through marketing capability and innovative capability. Although marketing capability does not relationship sustained competitive advantage directly, its relationships sustained competitive advantage indirectly through innovative capability. On the other hand, innovative capability relationships sustained competitive advantage directly. Therefore, they suggest that an enterprise needs to develop its organizational culture of entrepreneurship as its marketing and innovation capabilities to enhance its sustained competitive advantage.

Limitations

The main reason for limiting this research is that it causes the hypothesis to not follow the conceptual framework because the researcher reviews most of the literature in research in the European countries which are countries in the industrialized development industry, so the industry in Thailand, especially the industry used in this research, is an industry that still focuses on activities agricultural production is a major industry, unlike that of the literature review above. When comparing the industries used in this research, it is the processing industry of fruits and vegetables which are agricultural products, but the result of the literature review will be industries that are processed in a heavy industry or use innovation and higher technology than the industries used in this research such as machinery, robot, and automotive industry etc.

According to this research, there are still variables that review literature that is not consistent with the fruit and vegetable

processing and preservation industry in Thailand, such as variables related to Digital Literacy, Media Literacy, and Health Literacy, including Agile or Scrum, which are techniques. Management in a new dimension is a concept of work (not a form or process) and is not limited to being used for product development in the software line only. Agile places great importance on communication with all relevant parties and product development to meet the needs of users.

In the survey, the question was asked by the entrepreneur at the trade show or by telephone, in which the entrepreneur would have time to answer the questionnaire as well as the concentration in answering the questionnaire would be less as well. The results may affect the results of the research and may not be true, therefore, should have an appointment with the entrepreneur in advance and explain the purpose of the research including the scope of time to ask the entrepreneur to understand and cooperate with investigators. However, all these limitations can be resolved in future research.

Discussion

It can be concluded that a plausible way to evaluate entrepreneurial success Thai Fruit and Vegetable Processing and Preservation SMEs in Thailand should be based on the following factors: the ability to achieve the goal, profit trend, the prospect five number of customers, the sales volume trend, overall business trend, satisfaction from other people's view, entrepreneur's satisfaction when compared to his/her competitors,

entrepreneur's satisfaction as an owner, profit satisfaction, current numbers of employees, and entrepreneur's self-evaluation.

From the results of this research, there are three main points to help Thai Fruit and Vegetable Processing and Preservation SMEs in Thailand become successful:

1) Develop the desirable characteristics of entrepreneurs (Entrepreneurial Orientation), along with the improvement of products and services in a modern and innovative format in Thai Fruit and Vegetable Processing and Preservation SMEs in Thailand that will help entrepreneurs succeed with the following methods:

(1) Assessing the desirable characteristics of the entrepreneur in order to identify which entrepreneurs have the qualifications that meet the desirable characteristics of the entrepreneur. From there, it may be divided into 2 main groups, which are the groups that have the desirable characteristics of the entrepreneurs and the groups that have the desirable characteristics of the entrepreneurs a lot.

The first group will be taken to the business incubator course in order to create entrepreneurs by using desirable characteristics from research to develop entrepreneurs to meet the desired characteristics and know the methods or desirable characteristics of the entrepreneurs that It should be 1) Risk-taking, 2) Innovativeness, 3) Proactiveness, 4) Competitive Aggressiveness, and 5) Autonomy. Lumpkin and Dess (1996, pp. 138-153) explained that management strategic is linked to the performance of

entrepreneurs who involve themselves in the management process, decisions, and actions at all levels. Entrepreneurial orientation, a key ingredient for a successful organization, is a deviation from the norm since changing the values ingrained before becoming an entrepreneur contributes to high entrepreneurial performance. Entrepreneurial orientation has five aspects:

1) Autonomy. The means to act on his/her own, independent of other people or teams to bring forward an idea or vision and implement it successfully. (Training, framework, concepts, planning, and methods of success should be provided.)

2) Innovativeness. The means of engaging and supporting new ideas and novel experimental creative processes that may result in a new product, service, or process. (Create new experiences for leaders by studying trips, comparing their products and services with competitors, and practicing to differentiate themselves from competitors.)

3) Risk-taking. Undertaking the burden of debt or building a property in exchange for a large market opportunity that will bring high returns. (Practice activities that measure risk-taking skills, such as role playing. Entrepreneurs try to play stocks in simulation games to practice entrepreneurial risk.)

4) Proactiveness. The implementation of plans to find new opportunities including participating in emerging markets. (Train curiosity for entrepreneurs by using various technologies to help, such as trying out data analysis tools, social media tools to discover business

opportunities, including participating in emerging markets)

5) Competitive aggressiveness. Engaging in direct competition to gain success and an increase in good standing in the market compared to his/her competitors. (Let entrepreneurs compete to present their work using various business strategies to convince customers to be interested and able to close sales better than competitors.)

The remaining group will skip to point 2.

(2) Determining and able to select entrepreneurs who have desirable characteristics of entrepreneurs to develop and further develop products and services in modern and innovative ways that will help entrepreneurs to be successful achieved with regard to 1) Quantitative Innovation, 2) Innovation Communication, and 3). Process Innovation. The innovative performance of entrepreneurs can be divided into three groups.

1) Quantitative Innovation, Banbury and Mitchell (1995) studied the effect of introducing important incremental innovations on market share and business survival. They found that incremental product innovation is a fundamentally significant aggressive factor in start-up ventures. The more regularly an industry stakeholder was among the first to present a significant item development, his/her piece of the overall industry in the business.

2) Innovation Communication, Pfeffermann (2011) studied innovation communication as a cross-functional dynamic capability in the strategies of organizations and networks. He found that previous researchers concentrated on innovation communication and its effect

on the innovation process from the idea to launch as a part of corporate communication (e.g. Fink, 2009; Zerfaß, 2009). Three communication fields are utilized in this procedure: 1) internal communication, 2) external communication, and 3) public relations (Nordfors, 2009).

3) Process Innovation, besides innovation (Pfeffermann, 2011), dynamic capabilities are essential factors in the innovation economy to address environmental dynamism (Teece, Pisano, & Shuen, 1997) such as new stakeholder demands or new markets. Due to knowledge-empowered customers and advanced information and communication technologies various new business models and market entry strategies have emerged for launching new products and added-value services (Davenport, Leibold, & Voelpel, 2006). As a result, enterprises manage a broad spectrum of innovations in new market structures beyond product nowadays and process innovations (e.g. managerial innovations, marketing innovations, and co-created targeting innovations) based on internal and external information sources and knowledge (e.g. Davenport et al. 2006; Lichenthaler & Lichtenthaler 2009; Waarts, van Everdingena, & van Hillegersberg, 2002). In this context, the question is how the communication of innovations can be understood in the innovation economy.

2) Some entrepreneurs have good products and services but are unable to communicate or offer sales to customers due to a lack of marketing capability. Particular attention should be paid to this skill which may create a business incubator linked from Entrepreneurial Orientation, which will focus on

Marketing capabilities in this research is considered by applying the following indicators: (1) marketing strategy (pricing, product development, and selling), (2) marketing communication (channel management, and marketing communication), and (3) marketing management (marketing information management, marketing planning, and marketing implementation). These 3 factors can evaluate which entrepreneurs are capable of and then classify by the interests of entrepreneurs or according to the aptitude of the entrepreneur as well. There are also various organizations, both public and private, that are interested in developing skills for entrepreneurs, such as the Department of Industry Promotion, Ministry of Industry, Department of Business Development, Ministry of Commerce, and Association of Thailand etc.

3) There are many entrepreneurs capable of producing similar products to their competitors. In this digital age, entrepreneurs should rely on techniques, marketing capabilities, and innovation to give them competitive advantage in the market.

The results of the research show that the global increase in entrepreneurs has rocketed, resulting in increased quantities of imitation goods and services offered by Thai fruit and vegetable processing and preservation SMEs. Moreover, the results show that innovative performance and marketing capability are highly related to entrepreneurial success. Finally, the development of strategies by using innovative performance and marketing capability as drivers will induce many successful entrepreneurs in a variety of industries.

Future research

1) According to this study, marketing capability did not moderate the relates of innovative performance on entrepreneurial success. It may be because the industry being analyzed is still using less marketing capabilities and innovations than other industries. Therefore, this model may be tested with other industries in order to study the factors that relate the success of entrepreneurs in the future e.g. robot, automobile, device, and high technology product etc.

2) If this research is to be implemented in the future, the researcher thinks that Digital Literacy, Media Literacy, and Health Literacy are factors that should be studied since, as today is a digital society and digital trends, consumption of products and services may increase and depend on the above factors and they are possible for entrepreneurs to be successful.

3) In addition, there are some variables that relationship and are fundamental to the success of entrepreneurs from literature reviews in many countries, especially European countries: human capital, but in the context of the Thai fruit and vegetable processing and preservation industry does not have any relationship on the success of entrepreneurs at all. Therefore, if this research is to be developed in the future, study and analyze the variables in the context of Thailand's industry.

4) The results show that there are three main variables that are related to entrepreneurial success: marketing capability, innovative performance, and entrepreneurial. orientation, therefore, relevant agencies, both public and private, with the creation of incubator and accelerator to develop small and medium-sized businesses in Thailand are able to bring discussion of practical research results to further and develop entrepreneurs to be able to run their sustaining business.

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