PRODUCT INNOVATION PROCESS INNOVATION AND MANAGEMENT INNOVATION AFFCTING BUSINESS PERFORMANCE OF THAI FOOD INDUSTRY.

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ABSTRACT

The objective in this research was to study the factor affecting the efficiency of food industry business in Thailand. This research uses quantitative research method by using data collection methods and using the questionnaires as a tool then doing reliability testing by Conbach alpha coefficient method. The testing result was .927 which was concerned the highest reliable after that collecting the questionnaire data from executive, supervisor, and engineer for 250 food industries by using sample random sampling method, data analysis, statistical software program to analyze percentage statistics, mean, standard deviation (s.d.) and multiple regression equation analysis. Analysis result found that product innovation factor

Analysis result found that product innovation factor, process innovation and management innovation affecting the efficiency of business in all factors at significant level .05 by factor at highest level was product innovation, management innovation and process innovation respectively and correlation level of factor could explain efficiency variation of food industry business 56.8 percent (R2 = 0.568). However, food industry executive might concern the organization development to innovation organization by encouraging and supporting supply chain and creating cooperation within organization, organization management caused innovation organization for development the performance, creative innovation for competitive advantage

Keywords: Product Innovation, Process Innovation, Management Innovation, Business Performance

INTRODUCTION

Under fluctuation and uncertainty of various environmental situations all the time such this situation is getting more intense included the number of population, consumption products requirement are needed more in world market. Thailand was food producer and has good agricultural background. Thai agricultural products are popular on around the world and agricultural industry is particularly processed food. Exports of agricultural product and Thai products in year 2018, Thailand has value of exports agricultural products and products are 8,108,299.8 millions baht [1].

Developing nation under Thailand 4.0 defines as nation strategy to drive economic reform, food industry is the one of targeted industries for Thailand 4.0 to develop the performance of business by creating sustained competitive advantage readiness to change, creating strategies and implement strategies to practice to find the benefit for business; therefore, creating important strategies of competitive advantage which consists of cost strategy, differentiate strategy and focus strategy. Those said that they are operation effectiveness improvement such as innovative management, quality management and technology management, having the best practices to be able creating the sustained

competitive advantage [2]. From increasing world population need more food consumption at the same time abilities to produce the world food is declining every moment. From the agricultural area, weather conditions that are more volatile, global warming or natural disaster evens that are difficult to predict, establishing a stable base for food industry to move forward policy "Kitchen of the World" sustained under knowing and selecting various technologies and innovations to create value added products, strengthen strategy of agricultural sector, food security and energies that are strong and sustainable agricultural production base [3]. Government joint and promote ot production innovation and support to export differentiated innovation products which caused by the cooperation of all sectors to operate efficiency to align with the study of Broekel et al., [4]. Found that creating collaborative network of clustering lead to innovation and cooperating of research and development and Ding [5]. found that collaboration in supply chain could work together with good creating innovation; however, Thai food industry has growth and high competition affecting the supply chain of industry also grow as well from increasing research and development in order to creating competitive advantage which is importance for industry where has collaborate in research and development of product, process and good management affecting ability of innovation and competitive advantage Chanmsuk [6]

If talking about innovation is making the new thing for innovative concept had researches in various areas such as innovative concept according to the meaning of product and service and concept that make the customers satisfied and causing benefit to organization [7].by innovation that has relate to ability of organization in collaborative to create new innovation such as new process innovation, new product innovation or new idea in organization said when compare the innovation is like the heart of business process showing the pioneer concept consisted by taking those pioneer ideas to advantage and grow of organization next. In addition, those academician defined definitions of innovation such as innovation means improvement or creating the new thing in the process, product, technique, management system and organization to crate the value and commercial [9]. Innovation is taking the new thing or new method which is combination by synthesizing knowledge to create the product, valuable process or new services [10]. Further, review of theoretical concept involved innovation which had academicians and researchers studied about the indicators of innovation variables consisted 1). Product innovation and 2). Process innovation [11, 12, 13]. Research of Chamsuk et al., [9] found that innovation consisted 1). Product innovation 2). Process innovation 3). Organization innovation 4). Marketing innovation 5). Service innovation and Ford et al., [14] studied innovation consisted 1). Product innovation 2). Process innovation 3). Distribution innovation 4). Service innovation 5). Management innovation

For organization need to achieve the performance both of financial and marketing are higher than the competitors. The market performance could be seen from launch new product, penetration and market development, quality improvement and satisfaction of customer while financial performance mean the sale growth of organization, profitable and return of investment (ROI) [15]; therefore, organization might indicate the efficiency of organization performance [16] said that the performance of business was the performance efficiency assessment of profit result and cost effectiveness to operate of organization also continuous measurement of company work efficiency with ability to manage service quality and creating cooperation with employees in the organization, it caused that organization had sustainability performance [17] Creating value for products caused cooperation that was the directly beneficial to financial performance of the organization. Making new market was possible that ability increased the market share and increased more income. From product improvement and service quality are increased in customer satisfaction and loyalty leading to increase sales, to decrease cost of recruit new customer and customer attraction and higher

market share [18]. So innovation helping process improvement, sustainable development is benefit from cooperation that able to increase business efficiency in addition still have review theoretical concept involved to business performance which had academician and researchers who studied variables indicator of business performance consisted by 1. Return of Investment (ROI) 2. Sale 3. Profitability 4. Market Share and still have students about the business performance consisted by 1. Total income growth 2. Maintaining and satisfying customer 3. Expanding customer base 4. Business growth [17, 20]. For such problem and those important, researcher have to study about the factors affecting efficiency of food industry business in Thailand

OBJECTIVE

To study the factor affecting the efficiency of food industry business in Thailand

METHODOLOGY

Conducting research used quantitative research by studying and researching from secondary data resource such as book, magazine, related research and use data collection method by questionnaire collected data from executive, supervisor, engineer in food industry of 250 people by using Simple Random Sampling. Population that using in this research or unit of analysis was factory manager. Research tools were questionnaire to collect data after that taking those data to analyze and creating questionnaire of rating scale

Research tool creation

Using the questionnaire was the tool to collect data by creating questionnaire of rating scale at 5 levels [21]. Indicator of variables have the criteria for interpreting the result to opinion level of research; therefore, score during 4.21 to 5.00 was the strongly agree, 3.41 to 4.20 was agree, 2.61 to 3.40 was neither, 1.81 to 2.60 was disagree, 1.00 to 1.81 was strongly disagree by the questions adapted from existing academician including the collecting or sorting issues which studied from review literature related by developing question shown on table 1

Table 1
Creating meter and developing question from research

Variable	Reference
1) Product Innovation 2) Process Innovation 3) Management Innovation	13,19,22, 23, 24
Business Performance	13,17, 19,20, 25

Quality of measuring instrument

Creating questionnaire by reviewing concept, theory and related researches in order to develop questionnaire from related research then checking instrument quality by taking instrument to find the value of index of item objective congruence: IOC by expert and specialist take instrument to improve and test for real storage with sampling group of 30 people then finding the reliability value by measuring from Cronbach's alpha coefficient was 0.927 after that taking the instrument to collect data with real samples and taking data from questionnaire collection for quantitative data analysis shown on table 2

Table 2
Reliability statistics

Cronbach's Alpha	N of Items
.927	12

Statistics using in analysis

This research determined confident interval level 95 percent or error level acceptance (α) at .05 in statistics testing or accepting error 5 percent, basis statistical analysis of sampling group to know the sampling group distribution feature by using descriptive statistics such as frequency, percentage and to know the variables distribution by using descriptive statistics such as mean, standard deviation (s.d.) after that to reply research question related to factors affecting effectiveness of food industry business in Thailand where used many techniques analysis according to the conceptual framework had been defined by multiple regression analysis

Research hypothesis

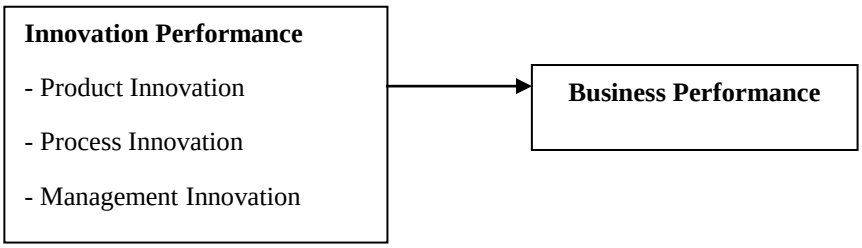
Hypothesis 1: Product Innovation affecting Business Performance of Food Industry in Thailand

Hypothesis 2: Process Innovation affecting Business Performance of Food Industry in Thailand

Hypothesis 3: Management Innovation affecting Business Performance of Food Industry in Thailand

This research determined conceptual framework in research shown on figure 1

Figure 1
Conceptual framework



RESULTS

From data collection through completing questionnaires from food industry establishment in Thailand and received questionnaires back total 250 cases. Data analysis result by general data survey of respondents were classified by gender, age, education level and position then taking data collection would be analyzed data by finding frequency and percentage of data shown that the most respondents was male 132 people or 52.80 percent and female 118 people or 47.20 percent, there were supervisor 112 people or 44.80 percent then they were engineer 76 people or 30.40 percent and manager 62 people or 24.80 percent, the most age was during 30 to 39 years old at 102 people or 44.80 percent, 40 to 49 years old at 76 people or 30.40 percent, up to 50 years old at 46 people or 18.40 percent and lower than 30 years old at 26 people or 10.40 percent and the most education level was bachelor's degree at 165 people or 66 percent then master's degree at 78 people or 31.20 percent and high than master's degree at 7 people or 2.80 percent shown on table 3

Table 3
General data from respondents

Lists	Data	Frequency (n=250)	Percentage
Gender	Male	132	52.80
	Female	118	47.20
Position	Manager	62	24.80
	Supervisor	112	44.80
	Engineer	76	30.40
Age	Lower 30 years	26	10.40
	30-39 years	102	40.80
	40-49 years	76	30.40
	Up to 50 years	46	18.40
Highest education level	Bachelor's degree	165	66.00
	Master's degree	78	31.20
	Higher than master's degree	7	2.80

Variables analysis to find mean, standard deviation and correlation of variables were Product Innovation, Process Innovation, Management Innovation and Business Performance. Analysis result shown that respondents focused on the Business Performance factor at agree level, mean at 4.10, standard deviation at .676 then making factor analysis affecting efficiency of food industry business in Thailand found that Process Innovation had highest mean at 3.87, standard deviation at .754 by meter mean was agree level then it was Product Innovation From had highest mean at 3.86, standard deviation at .807 by meter mean was agree level and Management Innovation had highest mean at 3.83, standard deviation at .804 by meter mean as agree level, this analysis used Pearson's Correlation of all variables to analyze [27]. Data analysis result found that correlation between observed variables has correlation value during 0.629 to 0.707, statistical significant level shown on table 4

Table 4
Descriptive statistics and correlations

Variable	Mean	Std. Deviation	Business Performance	Product Innovation	Process Innovation	Management Innovation
Business Performance	4.10	.676	1.000			
Product Innovation	3.86	.807	.684	1.000		
Process Innovation	3.87	.754	.629	.641	1.000	
Management Innovation	3.83	.804	.671	.661	.707	1.000

From Multiple Regression Analysis and ANOVA of variables found that correlation checking of factors affecting food industry business in Thailand consisted by Product Innovation, Process Innovation, Management Innovation affecting efficiency of food industry business in Thailand, F-test at 53.003, significant level .000 which was less than .05 then analysis for testing the influence each of independent variable shown on table 5

Table 5
ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	32.191	3	10.730	53.003	.000[b]
Residual	24.496	121	.202		
Total	56.687	124			

a. Dependent Variable: Business Performance
b. Predictors: (Constant), Product Innovation, Process Innovation, Management Innovation

Analysis result of factors affecting efficiency of business and hypothesis testing by statistic as t-test which got standard regression coefficient as Beta found that Product Innovation, Process Innovation, Management Innovation affecting efficiency of food industry business in Thailand by supporting all hypothesis at correlation level of factor from R^2 = 0.568 was the factors which explained the variance of efficiency of business at 56.8 percent, the hypothesis testing result shown on table 6

Hypothesis 1: Product Innovation มีผลต่อ Business Performance ของ Food Industry in Thailand, hypothesis testing found that standard regression coefficient = 0.372, t-testing = 4.417 (p-value = .000), the acceptance testing result according to hypothesis with statistical significance

Hypothesis 2: Process Innovation affecting Business Performance of Food Industry in Thailand. Hypothesis testing found that standard regression coefficient = 0.180, t-test =2.010 (p-value = .047), the acceptance testing result according to hypothesis with statistical significance

Hypothesis 3: Management Innovation affecting Business Performance of Food Industry in Thailand. Hypothesis testing found that standard regression coefficient = 0.298, t-test = 3.263 (p-value = .000), the acceptance testing result according to hypothesis with statistical significance

Table 6
Coefficients[a]

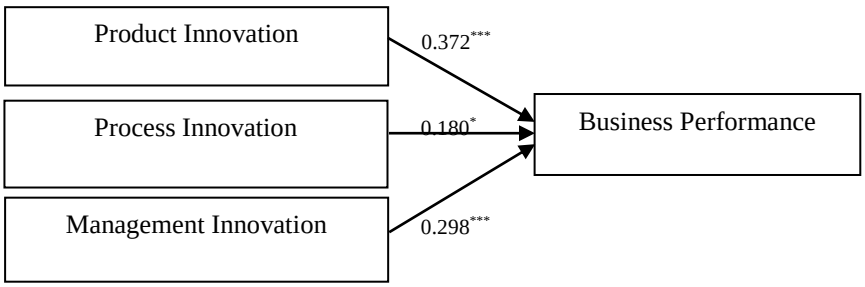
Model	**Unstandardized Coefficients**		**Standardized Coefficients**	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.310	.229		5.728	.000
Product Innovation (X_1)	.312	.071	.372	4.417	.000
Process Innovation (X_2)	.161	.080	.180	2.010	.047
Management Innovation (X_3)	.251	.077	.298	3.263	.001

a. Dependent Variable: Business Performance
R^2= 0.568, p-value = .000***

From data analysis could be created equation for overall prediction of factors affecting efficiency of food industry business in Thailand (Y) as follow;

$$Y = 1.310 + 0.372X_1 + 0.180X_2 + 0.298X_3$$

Figure 2
Model of factor affecting efficiency of food industry business in Thailand



Remark *** p-value<.001, * p-value<.05

However, studying factors affecting efficiency of food industry business in Thailand consisted by Product Innovation, Process Innovation, Management Innovation affecting efficiency of food industry business in Thailand, research result supported all hypothesis and independent factor could explain the variance of business efficiency at 56.8 percent to align with Cheng, et al., [13] studied the impact of green innovation on performance included friendly environment products and efficiency of performance of company to crate competitive advantage particular process innovation could indicate the development of environmental competencies and competitive advantage also caused company had competitive advantage among competitors in business and Chien et al., [20] studied learning, marketing principle, planning of entrepreneur and creating innovation to be the success factor for the company using technology found that learning plan had role as central media in relationship during marketing principle and able to crate innovation through learning organization for competitive advantage and improved efficiency business better

CONCLUSION AND FUTURE WORK

Food industry is the main of nation economic development from living and consuming of people in country and exporting food to international countries; therefore, creating innovation is the power driven in development of marketing channels. The growth of organization profitability and country economic by determining strength strategy, creating stability, wealth and sustainability development establishment of innovation included concerning supply chain environment from upstream, midstream and downstream which are the stakeholder from operation of establishment; however, acceptance innovation concept for operation to create competitive advantage and promote efficiency performance and increase advantage. Company had awareness the impact of innovation causing the important benefit in business operation of the company for competitiveness in the world market caused the economic development and related industries of country

Therefore, food industry should study the creating collaboration throughout the supply chain since upstream, midstream and downstream in upgrade the development to become the green industry certification due to it was the significant factors impact the efficiency performance, increasing competitive advantage included studying both internal and external pressure factors which support to push industries development influence sustainable competitive advantage

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