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Developmental Factors Influencing Innovative Behavior of Thai Animal Feed Manufacture's Production Employees

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Key words: Structural equation modeling development of the factor, the influence of innovative behavior of employee, factor structure that influences the innovative behavior

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Abstract: Animal feed manufacture in Thailand required a lot of raw materials and workforces. To increase the potential of cost management innovation needed in animal feed manufacturing, this study showed that Innovative Atmosphere (IA) had directly influence innovation-stimulating leadership behavior (IL) with the statistically significance level of 0.001 ($p<0.001$). Innovative Atmosphere (IA) had directly influence Innovation Behavior (IB). Contact outside the Organization (CO) had directly influence innovation-stimulating leadership behavior (IL). Contact Outside the organization (CO) had directly influence Innovative Behavior (IB). Innovation-stimulating leadership behavior (IL) had directly influence Innovation Behavior (IB). Organizational Innovation (OI) had directly influence Intrinsic Motivation (IM). Intrinsic Motivation (IM) had directly influence Innovation Behavior (IB). The model of innovative behavior from factors promoting innovative behavior could explain the innovative behavior by 75.3% ($R^2 = 0.753$). Therefore, the leader should support the exploration and discovery behavior of the idea that would create novel things for the organization. This would enhance the competition ability between domestic animal feed manufacture.

INTRODUCTION

Thailand is an agricultural producing country, especially rice. The by-products of rice processing are rice bran and broken rice. The production of animal feed in the industry level at present still have some issues since, the many producers do not have much knowledge of animal nutrition, time or shortage of labor in food mixing process. Therefore, buying food for animals is more convenient and more appropriate. Anyway, the animal feed industry is sometimes founded from people who have own livestock industry already since the domestic raw material are not enough and the owners can also earn some profits from operating animal feed industry. In addition, this kind of combination industry would create many job opportunities for workers which eventually drives the economy of the country. The production of animal feed in Thailand, moreover, can be exported to

Table 1: Structure of the thai economy in 2014

Structure of the Thai economy in 2014		
Economy	Proportion per GDP (%)	Proportion/labor (%)
Industry	39.2	16.9
Wholesale and retail	13.4	15.9
agriculture	8.4	34.1
Construction	4.3	5.6
Other services	24.9	6.7

Other services include finance, education, hotels and restaurants. Office of agricultural economics http://www.oae.go.th (Retrieved 20 June 2015)

Table 2: Export structure of Thailand in 2014

Categories	Value: million baht	Proportion: percentage
Agricultural products (Agriculture, livestock)	719,562.9	9.84
Agricultural products	547,465.4	7.48
Industrial products	5,646,993.5	77.20
Minerals and fuels	400,678.6	5.48
Others	0.0	0.00
Total	7,314,700.3	100.00

Department of international Trade promotion ministry of commerce (Retrieved on May 30, 2015)

overseas. Nowadays, feed manufacturing is suitable for farmers who lack of nutritional knowledge, time or workers to prepare in-house animal feed. Purchasing animal feeds is faster and more convenient. In 2014, the economic structure in Thailand indicated that agriculture accounted for 8.4% in Gross Domestic Product (GDP), yet 34.1% in labor force (Table 1).

The total cost of feed producing varies by the cost of raw materials which will also affect the profitability, organization survival and human well-being. This situation also decreases export competition ability (Animal feed, animal product and processed food) of Thailand. Therefore, the government take control the animal feed sale price which is directly affected to the feed manufacturing company such as Charoen Pokphand Foods PCL and Betagro PCL. These two-top ranked animal feed producing company then need to reduce the producing cost due to the increasing trend of raw materials of world market mechanism. Otherwise the company will close down (Table 2).

Animal feed manufacturing can affect several activities including daily life, economic and social cost as well as the business competition ability. For example, Thai kitchen to kitchen of the world project has determined Thailand as complete food producer. Thai food has unique taste, delicate preparation and healthy. Part of this project support the use of Thai raw material and Thai condiment to increase the exportation. Meat from farming is the important ingredient for cooking. In this study, the researcher had reviewed the literatures and conducted the exploratory study. The exploratory study was aimed to explore the variables and phenomenon variable using identified variable method. The subjects were senior managers of animal feed manufacturing company and innovative professionals. The results would bring to explain the incidence of a certain variable to confirm the variable that influence the innovative behavior in animal feed manufacturing in Thailand. It was found that innovation-stimulating leadership was thought to be the leadership behavior that stimulated the innovation of staffs in group discussion or organization[1].

The literature review also found that the innovation played an important role to drive the business and innovation was the novel tool to suitably compete the present competitors. To initiate the standard innovation in the organization, the innovative behavior should be prior created in the organization. The innovative behavior in every organization was the same in production and service sector[2]. Seeing that animal feed industry in Thailand required a lot of raw materials and work forces, the improvement of innovative behavior in both inside and outside animal feed industry would increase the efficiency of business administration in term of cost of animal feed industry.

The fundamental frame of thought of innovative behavior can be instantly applied from industry to industry. It was because the innovative behavior would encourage staffs to explore and discover their ideas to process and to create the new things to the organization. Therefore, it would effectively increase the competitive ability between domestic and international animal feed manufacturing company. The knowledge of this research will be the guideline to efficiently improve the animal feed manufacturing in Thailand, to fulfill the customer needs and to sustainably compete the current and future situation.

Research objectives: To develop the structural equation model of factor influencing the innovative behavior of production employee in Thai animal feed manufacture. To examine the correlation of the developed structural

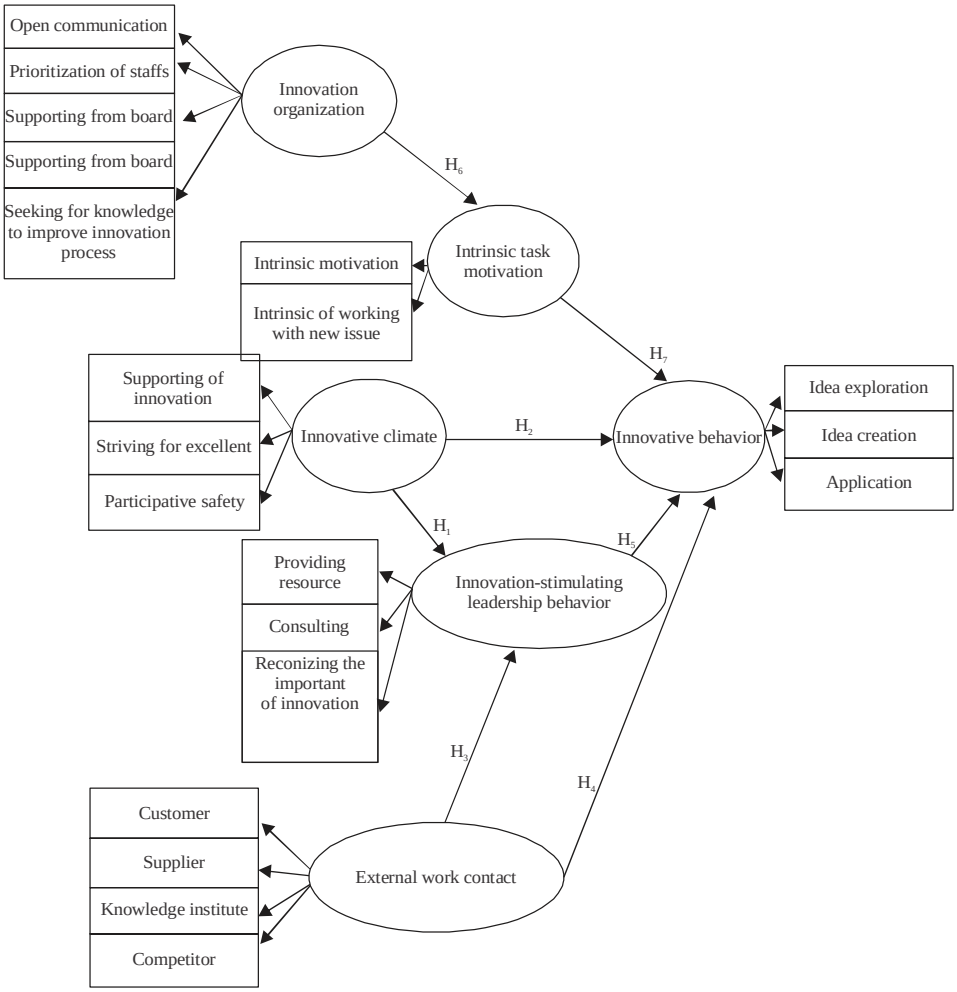

Fig. 1: Conceptual model

equation model of factor influencing the innovative behavior of production employee in Thai animal feed manufacture by empirical information. To study the direct and indirect influence as well as the total influence factor to the innovative behavior of production employee in Thai animal feed manufacture (Fig. 1).

Literature review: General information of animal feed production industry in Thailand. The rapidly increased of economic growth in Thailand results in the expansion of industry section. Thus, it would be better to improve the agriculture and livestock section along this way. The livestock section can be improved by increasing the exports to replenish the imports. One of the strategy to compete in an international market is that reducing the cost of livestock production which mainly comes from animal feeding as high as 60-70% of the total cost. Thus, the animal feed industry is necessary to upgrade the standard of animal feed production and also improve the product innovation, process innovation and also administrative innovation in the organization.

Animal feed producing process is started from separating un-processing raw materials, then heating it up with the suitable time and temperature for each raw material. The heating up process may cause air pollution and bad odor. Next, the pre-processed materials are baked on the sieve to isolate the impurities, then grinded it, mixed it well and cooled it down using water cooling system. The animal feed is now ready to pack in the different packages and logos depending on manufactures. Anyway, some manufactures for instance, use mixing machine, making animal feed into pellet before packaging and selling to animal industry.

The economic outlook for animal feed industry in Thailand is now prompt to support the growth of animal feed industry. Thailand also exports animal feed

Table 3: Animal feed production and sale

			2014				
Unit: thousand ton	2012	2013	1st quarter	2nd quarter	3rd quarter	Jan-Oct	2014
Production	8,867.62	8,752.77	2,210.73	2,311.91	2,617.96	8,024.03	9,790.84
Percentage per year	8.84	-1.3	3.33	8.3	11.33	8.05	11.86
Percentage per quarter		3.94	4.58	13.24			
Sale	7,601.75	7,353.4	1,852.77	1,923.47	2,193.14	6,718.60	8,217.02
Percentage per year	0.45	-3.27	3.56	7.96	2.00	21.56	11.77
Percentage per quarter		1.52	3.82	14.02			

Office of Industrial Economics, 2014

especially dog and cat food, canned food for pets, prepared fish and shrimp food (Table 3). An steadily increased growth trend of animal feed industry can influence worker's life. Therefore, the development of innovation in animal feed industry will sustainably increase the competition capability and business administration.

Innovation behavior theory and concept: The business organization had to adapt itself to the current competition to reciprocate the unlimited expectation of the customers. The innovation was mentioned to do[3] but it was not easy for business organization. Innovation is the expression of person in terms of thinking and experimenting novel things that would benefit to the organization. Innovation consist of opportunity exploration, generativity, championing and application and it can be categorized as proactive behavior. Innovation behavior has an advantage to both person, teamwork and in any level of the organization. For staffs, the improvement of innovative behavior will produce the novel innovation in the organization since the innovative behavior is linked to the productivity of ideas. Staffs were the most important factor to accomplish the innovation in the organization which they had to perform following organization scheme. To clarify the innovative behavior, researcher would like to introduce 3 information parts including meaning of innovative behavior innovative behavior concept Innovative behavior theory and conclusion. The innovative behavior would benefit to person and organization, it would increase the organization survival and predict the changes in production section and the executive managers would concern the good changes sign. Therefore, the innovative behavior was all about bringing the initiation that would benefit to the organization by developing the working process and product, creating the initiative behavior that integrate everything together and finding the new opportunity to apply in the organization as in Fig. 2.

Organizational innovation: Organizational innovation is the new organization management concepts for changing organization behavior which was never changed before. Organization that bring up the new changing will look and see how to use all properties and low value resources to benefit the organization, integrate all composition to working together and allow Creative criticism.

Factors influencing organizational Innovation are open organizational communication, search for information of innovation development process, signify human resource and support from executive branch, etc.

Therefore, the innovation was the answer of the new generation organization to sustainably survive and to enhance the competitive ability. The organizational innovation was the concept of administrational rearrangement in term of the organizational characteristic in response to the globalization context. The globalization mainly comprised of knowledge and innovation to add the value, to improve and to produce good products and services to the customer's demand. The innovation improvement was achieved using communication to staffs via open communication, people driven, management support on physical aspects and accessibility use of information supporting innovation process.

Innovative atmosphere concept and theory: Every organization could create the working atmosphere that stimilate the participation and determination of staffs or related staffs which would result in the innovation in the organization[1, 4]. The leader or the organization itself had to support the innovation, participation as well as teamwork to obtain the excellent outcome using 3 majors factors including supporting for innovation, participative safety and striving for excellence[1, 4, 5].

Innovation-stimulating leadership behavior concept and theory: Innovation-stimulating leadership behavior was the leaders characteristic that had to accomplish on their staffs. Leaders could be categorized in several types such as life-cycle theories[6] that leaders would compose commanding, suggesting, working characteristic, emotional and social supporting, human relationship characteristic and readiness of the followers or group of

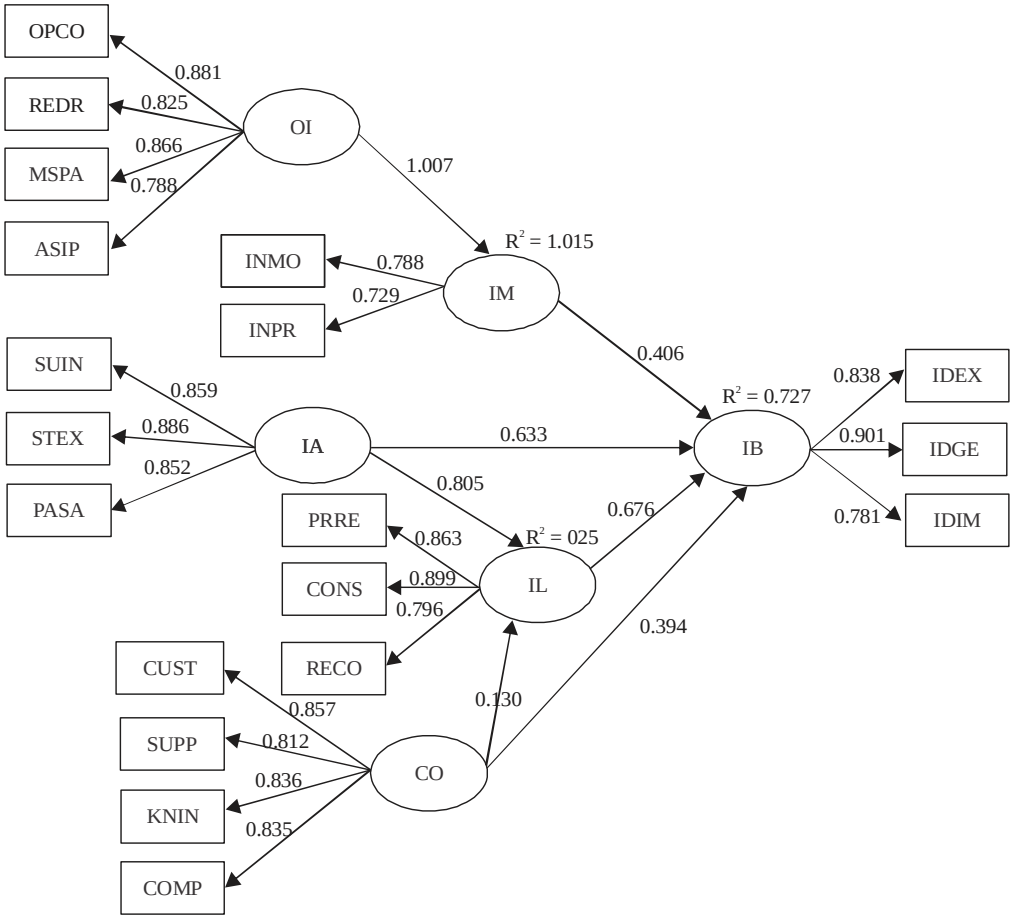

Fig. 2: Examined results of the correlation of model before adjusting the model

followers. Path-Goal theory of leadership was all about the creating motivation to subordinate people using prize to let them achieve their working purpose. Leaders must support the achievement of the followers[7]. The innovation-stimulating leadership behavior of the leaders would trigger the followers to be more initiative as well as support the follower's idea and innovation to create new outcomes, processes or products that would benefit to person, team and organization. Leaders had to concern these following principles including providing resource, consulting and recognizing the important of innovation.

Therefore, the innovation-stimulating leadership behavior is the leadership characteristic that will stimulate the creativity of the subordinates, together with support their thinking, commanding and concerning about innovative behavior. This innovation will benefit from person to teamwork and eventually the organization. Anyway, the innovation still mainly depends on organization culture. Leadership behavior such as the changing systematic management and working beyond the expectation will lead to unexpected results of working and improving the capability of the subordinates. Innovation-Stimulating Leadership behavior includes managing resource, suggesting, concerning the important of organizational innovation and supporting the innovation[1, 4].

External work communication concept and theory: The internal factors were part of information and strength, however, the external work contact also play a crucial role to implement the organizational progression and competition. The external work contact would add up the external viewpoint and novel theory to improve products or processes that would lead to the organizational innovation. The industry that could make more profit, use lesser cost or pay back faster would induce several investors and competitors. Organization had to stimulate staff responsibility and creating the innovation outputs, increase staff behavior to have the intension to achieve the goal with consistency and direction in order to carry out the final goal of the simulator. Thus, the empirical

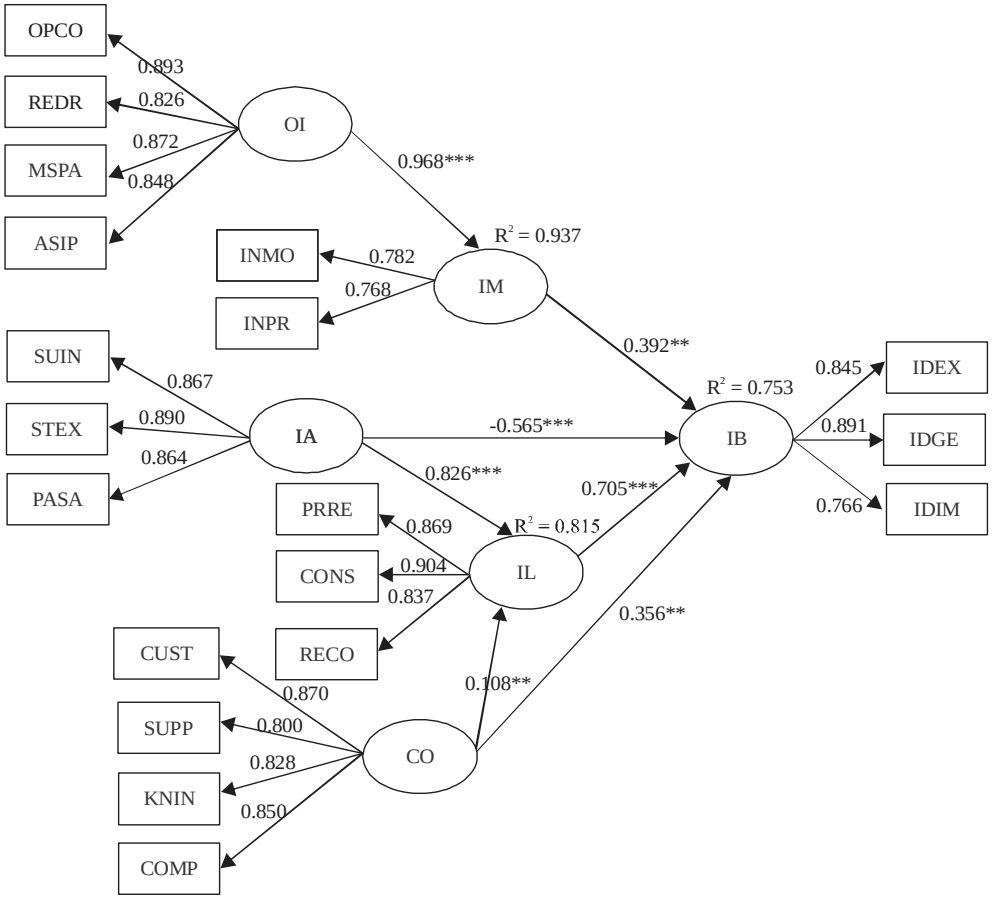

Fig. 3: Examined results of the correlation of structural equation model in the innovative behavior of production employee of Thai animal feed manufacture with the empirical data after adjusting the model

factors of the external work contact included customer, supplier, knowledge institute and competitor[1, 8, 9] (Fig. 3 and 4).

Intrinsic task motivation concept and theory: Motivation was generated by intrinsic or extrinsic driving to achieve each person demand. Motivation would drive person working even though they faced the problems or obstacles to create new things. Motivation would also make person enjoy working with problem and trying to find the solution. Intrinsic task motivation factors included intrinsic motivation and interested in working with new problems. Abraham H. Maslow stated that people required needs as order as a hierarchy of needs. People would fulfil themselves from the first step of needs in the hierarchy, then move up to the next level. For example, if earning was not enough (1st level of needs) or the job responsibility was too risky (2nd step if needs), people, in this case, the employee would not concern about the affection, acceptance, respect from other (4th step of needs) or self-actualization state (5, 6 and 7th step of needs). However, Victor H. Vroom stated that

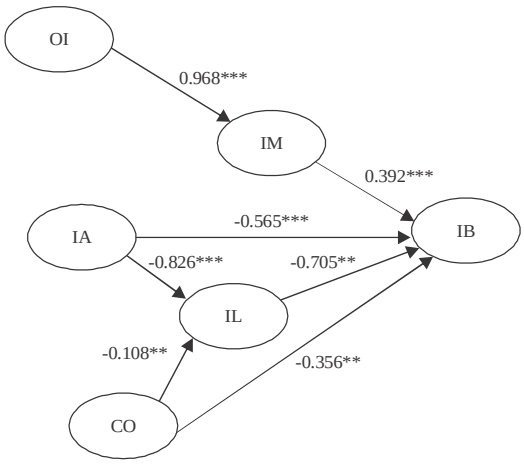

Fig. 4: Structural equation model of the innovative behavior that was studied by the viewpoint of factory managers or production manager of animal feed manufacturing company

working motivation usually came from people expectation of a certain action. This expectation may vary by people value which would trigger people even more intense if people ability was corresponding to the expectation.

Therefore, the concept and/or theory of needs as well as the motivation for creating innovation are all linked to the basic needs of life, which will influence the satisfaction while working to meet a goal and thus working success.

The causal relationship between innovative atmosphere and innovative-stimulating leadership: [1]states that the innovation was the linking between leader and innovative behavior of staffs. His study of innovation can be categorized into two points. Firstly, he studied the innovative behavior of the individual staff by observing and examining the multidimensional indicators of innovative behavior such as innovative atmosphere, external communication and leadership. However, the organizational culture should favor the innovative activity, as well as the strategy formulation should suitably correspond to the organization, transformation leadership, organizational culture organizational innovation[10] and innovative atmosphere. Creating innovative organization was not only due to extrinsic factors but also intrinsic factors. For example, staffs can explore the opportunity, initiate the creativity and apply it to their work.

Therefore, the study of casual relationship for creating the innovation will invent the innovation in order to motivate the creating of innovation and meet the organizational goal and the results of "structural equation modeling development of factor influencing the innovative behavior of production employees in thai animal feed manufacture" will improve this structural equation and examine the correspondence of the equation to the factors influencing the innovative behavior of production employee in Thai animal feed manufacture using empirical data. Also, this study will seek out the direct, indirect and interaction terms of factor influencing the innovative behavior of production employee in Thai animal feed manufacture as shown in Fig. 2.

Conceptual framework: In this study, had the reviews of innovative atmosphere and external work contact influencing the innovative behavior of Thai animal feed manufacturing companies revealed that all companies had the same pattern of producing and service sector. Despite working in any industrial sector, the human behavior that initiate the innovation was the same in logic analysis and consideration of innovative initiation[1, 2, 11].

This figure shows the reviews of innovative atmosphere and external work contact influencing the innovative behavior of Thai animal feed manufacturing companies revealed that all companies had the same pattern of producing and service sector. Despite working in any industrial sector, the human behavior that initiate the innovation was the same in logic analysis and consideration of innovative initiation[1, 2, 11].

Hypothesis 1: Innovative atmosphere has directly influenced the innovation-stimulating leadership behavior.

Hypothesis 2: Innovative atmosphere has directly influenced the innovative behavior.

Hypothesis 3: External communication has directly influenced the innovation-stimulating leadership behavior.

Hypothesis 4: External communication has directly influenced the innovative behavior.

Hypothesis 5: Innovation-stimulating leadership behavior has directly influenced the innovative behavior.

Hypothesis 6: Innovative organization has directly influenced the intrinsic motivation of job responsibility.

Hypothesis 7: Intrinsic motivation of job responsibility has directly influenced the innovative behavior. The hypothesis formation was based on the literature reviews of the causal relationship between innovative atmosphere, external communication, innovation-stimulating leadership behavior and intrinsic motivation for job responsibility to the innovative behavior. Most organization created the innovative atmosphere using personal and organizational factors which would result in the innovative behavior in order to meet the strtegic plan[4]. The board ought to create the appropriate innovative atmosphere in order to promote the innovation from personnel working and make the copetitive advantages and sustainability[9] as well as trigger the innovative behavior[9].

For the external communication[1, 8] stated that the external communication influenced the operation of staffs and boards to exchange the information, way of thinking or new methods to better improve the efficacy of the organization.

Innovation-stimulating leadership behavior significantly induced the innovative behavior in staffs through participation, counselling, delegation and supporting the innovation tasks[12]. Moreover, the innovation-stimulating leadership behavior could be triggered by building the strong relationship between innovative behavior and operation.

Motivation of job responsibility was originated from extrinsic factors in a person who keened on overcoming the problems or goals of the organization while working

which leading to initiate the creativity. Both of the intrinsic motivation toward the experimental task and interested in working with new problems contained seven questions. The organization should support and inspire staffs to participate and cooperate as a competency for personnel development.

Thus, the innovative behavior in the organization could not be happen without the leadership and the motivation of job responsibility to inspire staffs work and to support the innovative organization progression. The intrinsic motivation was only the one factor that positively related to the innovative behavior of staffs. Others also found that the innovation of nurse lecturer was corresponding to the empirical data.

MATERIALS AND METHODS

In this study, have to study quantitative research was the study the animal feed manufacture that received the Good Manufacturing Practice: GMP. Unit of analysis was managers or production managers in animal feed manufacture. The information on September 9th, 2015 showed there were 450 companies that was qualified dispersing in 6 regions in Thailand. Population characteristics were production or operation managers of animal feed manufacture who had more than 5 years working experience. Samples were selected by simple random sampling using sampling frame and limited criterion use questionnaire 8 part to study by asking 5 professionals in animal feed manufacturing and research field for checking the validity.

The reliability of 30 questionnaires was equal to 0.974 which had high confidence. Statistical analysis of sample was performed to determine the sample distribution via. descriptive statistics including frequency and percentage. Statistical analysis of variables improving the model comprised of 22 manifest/observed variables. To determine the distribution and dispersion of manifest or observed variable that would use to develop the structural equation model of factor influencing the innovative behavior of production employees in Thai animal feed manufacture, descriptive statistics was performed including mean, standard deviation, skewness, kurtosis and Pearson's product-moment correlation coefficient analysis using SPSS and AMOS and qualitative research sample size in this study was belonged to qualitative research. Researcher selected sample who provided key information to further perform in-depth interview using open-ended questions. Then researcher considered the outstanding observation and significant problem to 4 variables. The target samples were 10 executive managers and other managers who supported the innovative behavior in the organization of production employees in Thai animal feed manufacture.

Table 4: Number of establishments producing feed of region in Thailand

Region	Population
North Region	15
The North East Region	32
Central Region	279
East Region	51
West Region	15
Southern	58
Total	450

Department of Livestock and Fisheries Department (2558)

Data was collected directly from these administrators and Thai animal feed manufacturing professionals. Data analysis was presented by model of the empirical information of structural equation modeling development of factor influencing the innovative behavior of production employees in Thai animal feed manufacture. The methodology structure follow:

Quantitative research: Population in this research was the animal feed manufacture that received the Good Manufacturing Practice: GMP. Unit of analysis was managers or production managers in animal feed manufacture. The information on September 9th, 2015 showed there were 450 companies that was qualified dispersing in 6 regions in Thailand. Population characteristics were production or operation managers of animal feed manufacture who had <5 years working experience. Samples were selected by simple random sampling using sampling frame and limited criterion Table 4.

Questionnaires: Part 1: general information of answerers; gender, age, current job position, working experience and education.

Part 2: Information of company that answerers work for business type, number of staffs and workers and company profile.

Part 3: Questionnaire about innovative behavior. Researcher had improved this questionnaire from[15, 5, 12, 1].

Part 4: Questionnaire about innovation-stimulating leadership behavior. Researcher had improved this questionnaire from[16, 17, 19, 12, 1].

Part 5: Questionnaire about innovative atmosphere. Researcher had improved this questionnaire from[13, 14, 12, 1].

Part 6: Questionnaire about external work contact. Researcher had improved this questionnaire from[12, 13, 14, 1].

Table 5: Measurement and development of research questions

External variables	Empirical variables	Development of research questions	No. of items
Innovative atmosphere	Support for innovation Participative safety Striving for excellence	Siegle and Kaemmerer, Anderson and West[13] De Jong.[1] and De Jong and Den Hartog [12]	11
External work contacts	Customer Supplier Knowledge institutes Competitor	De Jong[14] Den Hartog De Jong [1] De Jong and Den Hartog[12]	13
Innovative organization	Open community People driven Management support on physical aspects Accessibility use of information supporting innovation process)	(Tsai in Koson in Imran in, Smith in Norawar in (2011)	14
Innovation-stimulating leadership behavior	Providing resource Consulting Support for innovative	House and Dessler (1974), Koopman (1980) ; Yukl *et al*. (1990); Jackson *et al*. (1993) ; Den Hartog (1997), Parker *et al*. (1997); De Jong and Den Hartog (2005), De Jong. (2007), De Jong and Den Hartog (2008)	11
Intrinsic task motivation	Intrinsic motivation Interested in working with new problems	Tierney *et al*. (1999), Eisenberger and Rhoades (2001), Shalley and Perry-Smith (2001), Schoen (2011) Amabile (2012)	8
Innovation behavior	Idea exploration Idea generation Implementation trial/application)	Scott and Bruce (1994), Tierney *et al*. (1999), Janssen (2000), Kleysen and Street (2001), De Jong. (2007), De Jong and Den Hartog (2008)	13
Total			70

Table 6: Statistical values of the second order confirmatory factor analysis to the influence Innovation Behavior (IB)

Latent variables	Observed variables	Regression weight
Influence Innovation Behavior (IB)	Idea exploration	0.991
	Idea generation	0.955
	Implementation trial/application	0.888
Innovation-Stimulating Leadership Behavior (IL)	Providing resource	0.889
	Consulting	0.950
	Concerning for innovative	0.842
Innovative Atmosphere (IA)	Support for innovation	0.887
	Strivingforexcellence	0.953
	Participative safety	0.946
Contact Outside the Organization (CO)	Customer	0.906
	Supplier	0.896
	Knowledge institutes	0.922
	Competitor	
Intrinsic Motivation (IM)	Intrinsic motivation	0.956
	Interested in working with new problems	0.727
Organizational Innovation (OI)	Open community	0.920
	Significance of human resource management	0.883
	Supporting by boards	0.956
	Accessibility use of information supporting innovation process	0.958

Part 7: Questionnaire about intrinsic task motivation. Researcher had improved this questionnaire from[5].

Part 8: Questionnaire about organizational innovation. Researcher had improved this questionnaire from. Researcher had performed quality checking of the questionnaires by asking 5 professionals in animal feed manufacturing and research field for checking the validity. The reliability of 30 questionnaires was equal to 0.974 which had high confidence (Table 5). Statistical analysis of sample was performed to determine the sample distribution via descriptive statistics including frequency and percentage. Statistical analysis of variables improving the model comprised of 22 manifest/observed variables. To determine the distribution and dispersion of manifest or observed variable that would use to develop

the structural equation model of factor influencing the innovative behavior of production employees in Thai animal feed manufacture, descriptive statistics was performed including mean, standard deviation, skewness, kurtosis and Pearson's product-moment correlation coefficient analysis using SPSS and AMOS.

Qualitative research: Sample size in this study was belonged to qualitative research. Researcher selected sample who provided key information to further perform in-depth interview using open-ended questions. Then researcher considered the outstanding observation and significant problem to 4 variables. The target samples were 10 executive managers and other managers who supported the innovative behavior in the organization of production employees in Thai animal feed manufacture. Data was collected directly from these administrators and Thai animal feed manufacturing professionals. Data analysis was presented by model of the empirical information of structural equation modeling development of factor influencing the innovative behavior of production employees in Thai animal feed manufacture.

RESULTS AND DISCUSSION

Results and statistical analysis: This study showed that Innovative Atmosphere (IA) had directly influence innovation-stimulating leadership behavior (IL) with statistical significant level at 0.001 ($p<0.001$). Innovative Atmosphere (IA) had directly influence Innovation Behavior (IB). Contact outside the Organization (CO) had directly influence innovation-stimulating leadership behavior (IL). Contact outside the Organization (CO) had directly influence Innovative Behavior (IB). Innovation-stimulating leadership behavior (IL) had directly influence Innovation Behavior (IB). Organizational Innovation (OI) had directly influence Intrinsic Motivation (IM). Intrinsic Motivation (IM) had directly influence Innovation Behavior (IB). The model of innovative behavior from factors promoting innovative behavior could explain the innovative behavior by 75.3% ($R^2 = 0.753$).

The general information results revealed that there were 382 factory managers and/or production managers in animal feed manufacturing company. Most of them, 99.48%, were male production managers who had the age around 41-50 years old (40.48%). There were 55.24% of them had working experience less than 10 years and 43.98% had working experience during 11-20 years. The educational level for most of them was bachelor degree (71.47%). The 3.14% of the surveyed company had 1-50 staffs. All companies were standardized by Good Manufacturing Practice: GMP and 100% Thai shareholder.

The results of data analysis, aiming to examine the correlation of the long-term relationship model and the hypothesized model frame of thought, depended on the empirical data. Firstly, the structural equation model did not correlate with the empirical data as CMIN/df and RMSEA were too high (CMIN/df = 3.919 and RMSEA = 0.088), while GFI was 0.860 which was too low. Thus, the structural equation model in the innovative behavior of production employee of Thai animal feed manufacture as developed by researcher did not correlate with the empirical data as shown in Fig. 2. After first examined correlation of the model, the structural equation model in the innovative behavior of production employee of Thai animal feed manufacture was utilized the Modification Indices: MI based on the theory. This modification was suggested by program to prior select the highest value. There were 53 times of adjusting the model and model was changed in the good trend. The Chi-square value was reduced from 556.544-109.778 and RMSEA was also reduced from 0.088-0.019. This adjustment indicated that model was correlated to the empirical data. The factor loading value of all variables had CR (Critical Ratio)>1.96, indicating that factor loading value of all variables was not equal to zero with statistical significant at 0.05 ($p<0.05$). To sum up, the observed variables crucially indicated the latent variables.

Second order confirmatory factor analysis was performed between latent variables and observed variables which including influence Innovation Behavior (IB), innovation-stimulating leadership behavior (IL), Innovative Atmosphere (IA), contact outside the Organization (CO), Intrinsic Motivation (IM) and Organizational Innovation (OI). The regression weight for each variable was computed as shown in Table 6.

Innovation-stimulating leadership behavior (IL) by factor promoting innovation-stimulating leadership behavior (external work contact and innovative atmosphere) in this model could explain the innovation-stimulating leadership behavior by 81.5% ($R^2 = 0.815$). In addition, the Intrinsic Motivation (IM) by factor promoting intrinsic task motivation (innovative organization) in this model could explain the innovation-stimulating leadership behavior by 93.7% 7 ($R^2 = 0.937$). Finally, the Innovative Behavior (IB) by factors promoting the innovative behavior (external work contact, innovation-stimulating leadership behavior, innovative atmosphere, innovative organization and intrinsic task motivation) in this model could explain innovative behavior by 75.3% ($R^2 = 0.753$). The results of innovative behavior model in viewpoint of factory managers or production managers in animal feed manufacturing company was correlated to the empirical data. The statistical values evaluating the correlation of model to the empirical data were CMIN/df = 1.144,

GFI = 0.973, AGFI = 0.946, CFI = 0.998, IFI = 0.998, NFI = 0.984, RMSEA = 0.019 and RMR = 0.026 as shown in Fig. 4.

CONCLUSION

Researcher of the study of innovative behavior model of production employee in Thai animal feed manufacturing utilized external latent variables as independent variables including innovative organization innovative atmosphere and external work contact. There were 2 internal latent variables working as the interstitial variables including intrinsic task motivation and innovation-stimulating leadership behavior. The statistical indices of model correlation were all acceptable as follow CMIN/df = 1.144, GFI = 0.973, AGFI = 0.946, CFI = 0.998, IFI = 0.998, NFI = 0.984, MSEA = 0.019 and RMR = 0.026. The hypothesis testing found that Innovative Atmosphere (IA) had directly influence innovation-stimulating leadership behavior (IL) with statistical significant level at 0.001 ($p<0.001$). Contact outside the organization (CO) had directly influence innovation-stimulating leadership behavior (IL) with statistical significant level at 0.05 ($p<0.05$). Innovation-stimulating leadership behavior (IL) had directly influence Innovative Behavior (IB) with statistical significant level at 0.001 ($p<0.001$). Organizational Innovation (OI) had directly influence intrinsic motivation (IM) with statistical significant level at 0.001 ($p<0.001$). Intrinsic Motivation (IM) had directly influence Innovative Behavior (IB) with statistical significant level at 0.05 ($p<0.05$). The model of innovative behavior from factors promoting innovative behavior could explain the innovative behavior by 75.3% ($R^2 = 0.753$). This could imply that the innovative behavior of production employee in Thai animal feed manufacturing company was resulted from innovation-stimulating leadership behavior. The motivation to initiate the innovation had directly influence job responsibility and the creation of individual innovation. Therefore, the administrator should have some motivation for employees such as task clarification and prizing to create the motivation of initiating the innovation in production of Thai animal feed manufacture.

LIMITATION

The animal feed industry in Thailand is an increasingly important source of raw materials for production and labor, In addition to cooking for the growth of people in the country and abroad. May have the impact cause on the economy and environment. The management and production of the food and beverage industry in the food and beverage industry. The Stakeholders are interested in developing forms and only study in master of information technology management and Management, King Mongkut's University of Technology Thonburi but researcher hope to helpful in development on industry animal food and sustainably. Therefore, the leader should support the exploration and discovery behavior of the idea that would create novel things to the organization. This would enhance the competition ability between domestic animal feed manufacture.

Contribution to academic knowledge: In this study, the consistency of the structural equation model of variables affecting the innovation behavior of production personnel in the Thai animal feed industry was investigated. Developed with empirical data, the factors that directly influence Indirect Influenced of variables on innovation behavior of production personnel in Thai animal feed industry and advise improvement and development of animal feed production facilities the potential for innovation to prepare for entry into the international competition.

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