THE COMPONENTS OF THE INNOVATIVE ORGANIZATION: EVIDENCE FROM THAILAND

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ABSTRACT

This paper examines the components of the innovative organization in Thailand. The mixed method was used in gathering the data that can be categorized in two parts. Qualitative collection used focus group discussion in an R&D unit. The findings revealed that employees understood the innovation concept and the importance of innovation. This understanding could enable the company to compete in new business environments. In the quantitative element of the study, data were gathered from 152 employees by questionnaire. The results showed the means of innovative firm factors, company infrastructure, external confidence, clear objectives, team constitution, external influence, freedom, attitude toward risk, internal confidence, department growth and development, were not very different and the work period affected the perception of employees. The employees recommended that firms should create an innovative culture, set innovative behaviors as the work standard, and that communication among individuals, groups, and organizations would help employees create new ideas and implement their ideas.

JEL: M10, M12, M14

KEYWORDS: Innovation, Innovative Organization, Corporate Structure, Biotechnology, Strategy

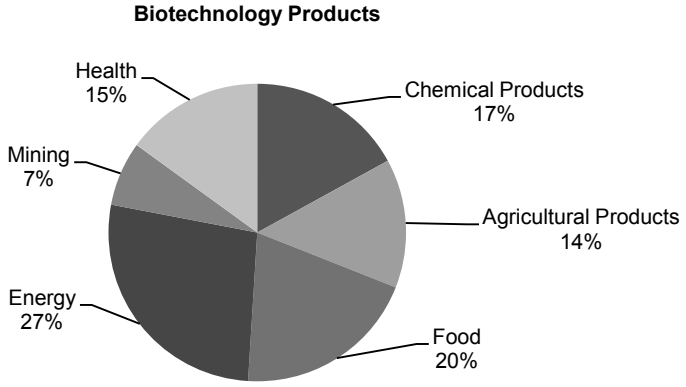
INTRODUCTION

Biotechnology is the process of improving and utilizing the DNA of small cells, including the processes of genetically-modified organisms. It is used in important industries including the food industry, pharmaceutical industry, and energy industry. Each of these industries are related to the quality of people's lives. The governments of the United States, China, Japan, Singapore, Malaysia, and India have intensively invested in biotechnology research and development, and have allocated resources and set clear directional frameworks to obtain a world market share of biotechnology products as shown in Figure 1.

An examination of biotechnology products reveals that energy products represent the highest proportion, followed by food products, chemical products, agricultural products, health products, and mining. Moreover, a report of the National Science and Technology Development Agency found that the economic value of biotechnology products in the world in 1983 was about 5,400 million dollars and increased to 11,000 million dollars and 58,000 million dollars in 1994 and 2003, and will increase to 300,000 million dollars in 2020.

The Thai government has also realized the importance of biotechnology and has developed a biotechnology development policy framework. The goal of the framework is to increase the nation's competitiveness as well as to develop the health and well-being of the people. Further, the government expects to receive investment from both domestic and international companies, cooperation between local firms and large countries in technology development, and expanded local trade to neighboring countries (National Science and Technology Development Agency, 2003). For this reason most local biotechnology companies have changed their strategy to an innovative and compete in the new business environment.

Figure 1: Market Share of Biotechnology Products



This figure shows the proportion of biotechnology product global market share in 2003 taken from the National Science and Technology Development Agency report.

Scholars have provided many definitions of innovation; however, in this paper the authors offer a simple definition. Innovation refers to new products or new processes that enable organizations to maximize the value of production, reduce costs, increase efficiency, and respond to the customer.

With innovative strategies, the organization would be wealthy and sustainable in the long run. However, successful innovation is not easy, it depends on several factors, such as marketing, funding, networking, and personnel and corporate management (Hawitt-dundas, 2006). Tidd & Bessant (2009) have noted that the challenges of modern management are to create an innovative organization. Executives should be a role model in changing and setting clear directions, preparing infrastructure, permitting employees to think and work on their own, and recognizing the employees' potential and developing their capabilities.

The aim of this paper is to examine the components of the innovative organization in Thailand. The paper is divided into five parts; the first part is the introduction, the second part is the literature review, the third part concerns methodology. The fourth part reports the findings, and the last part presents come concluding comments.

LITERATURE REVIEW

In the competitive economic era, innovation strategy is critical. Many organizations have tried to start new policies and create a learning environment and corporate culture that encourage employees' creativity and innovation (Hewitt-Dundas, 2006). These managerial practices will help the company obtain an advantage in the short and long terms (Hsueh and Tu, 2004; Santos-Rodrigues, Dorrego and Jardon, 2010).

Innovation has many meanings depending on the scholar's area of study. For instance, Burton and White (2007) suggested a broad definition of innovation that refers to the process of new products or new service development. Meanwhile, Roger (1995) stated that innovation is a new idea regarding implementation, that sometimes may be related to technology. One business expert also describes innovation as an entrepreneurial tool for obtaining property (Drucker, 1994).

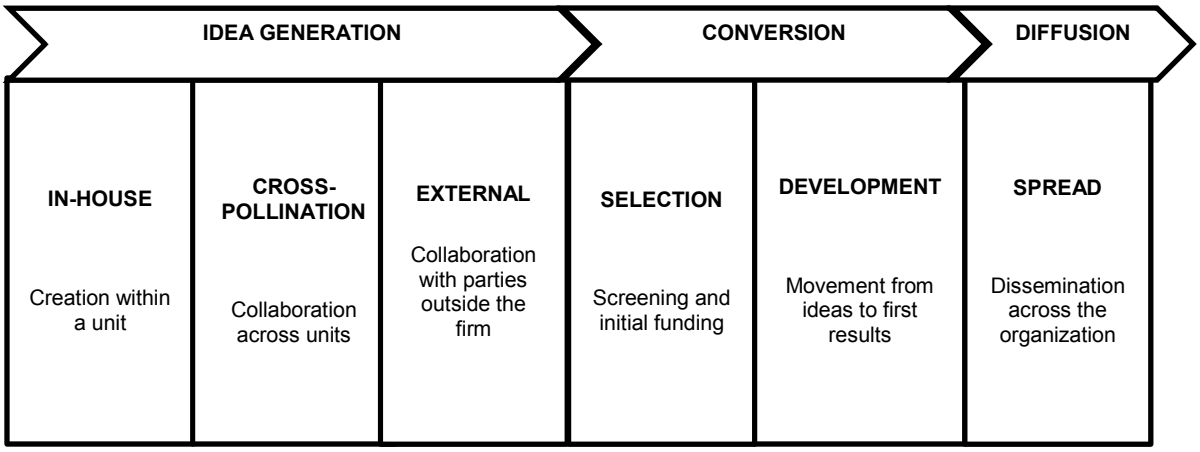
Jain (2010), divided innovation into three levels: the individual level, group level, and organizational level. At the individual level, the organization focuses on innovative behavior, idea generation, and idea implementation. Group innovation was the culmination of individual result. This process also affects knowledge sharing and knowledge absorption within the group. Finally, the organization level is

impacted by the system, policy, strategy, organizational structure, corporate culture, and other factors. All innovation levels result in new products, processes, and service.

Rothwell (1994) noted that the innovation process has many and varied models; however, the innovation model that is widely recognized is comprised of five models: the Technology Push Model, the Market Pull Model, the Coupling Model, the Integrated Model, and the Networking Model.

In this paper, however, the authors present Hansen and Birkinshaw's innovation model (2007) that described the stages of innovation process based on the value chain concept as follows: 1. Idea Generation which is the first stage of the innovation process. Ideas can be both from internal sources (employees), and external sources, such customers, users, suppliers, etc. 2. Conversion is the process of idea selection and development. The organization assesses the feasibility of the ideas and chooses potential projects to implement. 3. Diffusion is the commercialized stage. The organization distributes new products or services into the market.

Figure 2: Innovation Value Chain



This Figure shows the innovation value chain.

In organizational management, some academics have stated that the organization should emphasize the decision-making abilities of the manager, technology, and the work environment that helps employees to think, create, and implement ideas (Chalhoub, 2010; Craig and Dibrell, 2006). Additionally, Rosenfeld (2008) stated that executives not only have multi-skills, but also can motivate the employee to innovate. Meanwhile, the organizations have to create the appropriate infrastructure, corporate structure, and trust.

Tidd and Bessant (2009) have noted that the new challenge of organizational management is to create innovative organizations that focus on creativity and innovative behavior of employees though job design, reward systems, employee participation, and team building. Further, Tidd and Bessant described the critical components of the innovative organization as follows: 1. Company Infrastructure which refers to the resources, management models, and corporate structures that affect the operation. 2. External Confidence which refers to the attitude and confidence of the executive concerning employees. 3. Clear Objectives that guide employees in what needs to be done to achieve organizational goals. 4. Team Constitution which refers to the characteristics of team members and interaction between members. 5. External Influences that affect the operations of the organization such as funding, new technology, government policy, etc. 6. Freedom refers to the extent to which the organization permits employees to have the authority to decide, plan, and control their work. 7. Attitude toward risk, meaning the attitude of both the top executive and employees. They should have the characteristics of proactive thinking, being

ready to change, and learning from mistakes. 8. Internal Confidence refers to trust in a group of employees or the team, and the belief in the team members' potential. 9. Department Growth and Development realizes the employees' potential and develops their skills continually, including setting a clear career path.

Katz (2004) stated that the emergence of innovation often occurs in the organization because of the large investment in research and development and knowledge management system. He demonstrated the characteristics of a successful innovative organization, called the human side of the innovation, as follows: 1. Corporate Culture which focus on the innovation process and support the innovative behavior of employees. 2. Architecture/Structure meaning the relationship between the manager and subordinates, including the interaction among individuals, teams and the department. 3. Roles meaning the employees' role, both formal and informal, in the innovation process: project leader, product champion, supporter, and gatekeeper.

A pleasant environment and good management will result in effective innovation. Moreover, Francis and Bessant (2005) have noted that different types of innovation (incremental innovation and radical innovation) require different resources and management support.

METHODOLOGY

The research design of this paper is the mixed method, and the study focuses on a well-known biotechnology firm in Thailand. The case here is the import-export company that distributes raw animal feed materials and initiates new agriculture products through investment in research and development to expand the domestic and ASEAN market. The main products include shrimp feed, shrimp head protein extracts, soybean processing, organic minerals, organic agricultural supplement, and protein and probiotic enzymes. The current target is to accelerate to research and develop of human functional food. Additionally, the company works with government agencies, research institutes, and academic institutions to develop technology and to transfer knowledge. Further, the company has many valuable patents and won a National Innovation Award in 2007.

The methodology is categorized into two parts: the qualitative method and quantitative method. The qualitative collection used focus group discussion in the R&D unit. The participants consisted of a manager, an assistant manager, a supervisor, and two employees. The data analysis described the nature of the participants and grouping information followed the components of the innovative organization (Tidd and Bessant, 2009). The quantitative collection consisted of an employee opinion survey concerning the components of the innovative organization. The samples were 152 employees in all departments selected with the simple random sampling technique.

Table 1 shows the sample distribution. Most respondents were male (N = 99), age between 20-30 years (N = 81), and graduated from high school (N = 115). An average of 52.5% of employees were operators and 44.7 % of employees had stayed with the organization from 1-5 years.

FINDINGS

In this part, the authors divided the findings into two sub-parts based on the gathering methods: the findings from the quantitative method and the qualitative method.

The Quantitative Method Findings

Employees were surveyed concerning the components involved in the innovative organization: company infrastructure, external confidence, clear objectives, team constitution, external influence, freedom, attitude toward risk, internal confidence, department growth and development. A Likert scale ranging

from 1 (fully disagree) to 5 (fully agree) was used for the measurement. Table 2 shows the means and standard deviation of the components perceived to be involved in the innovative organization.

Table 1 Sample Distribution

Topics	Number of Employees	Percentage
Gender		
Male	99	65.1
Female	53	34.9
Position		
Officers	72	47.4
Operators	80	52.6
Age		
20-30 Years	81	53.3
31-40 Years	61	40.1
41-50 Years	10	6.6
Education		
High School	115	75.7
Certificate	14	9.2
Bachelor Degree	23	15.1
Work Period		
0-1 Years	43	28.3
1-5 Years	68	44.7
6-10 Years	26	17.1
More than 10 Years	15	9.9

This table shows summary statistics from the sample.

The team responses ranged. The high value was for constitution and external influence of ($\bar{x}$ = 4.34), followed by attitude toward risk ($\bar{x}$ = 4.18), company infrastructure ($\bar{x}$ = 4.14), clear objectives ($\bar{x}$ = 4.01), and internal confidence ($\bar{x}$ = 3.99). Department growth and development and the freedom dimension were at the same rate ($\bar{x}$ =3.96). Finally, external confidence was rated at a low level ($\bar{x}$ = 3.89). This suggests that all components were equally critical.

Table 2 Means and Standard Deviation of the components of the Innovative Organization

Components	Mean	SD
Company Infrastructure	4.15	0.86
External Confidence	3.91	1.02
Clear Objectives	4.02	0.78
Team Constitution	3.94	0.74
External Influence	4.34	0.79
Freedom	3.98	0.73
Attitude toward Risk	4.19	0.59
Internal Confidence	4.01	0.75
Department Growth and Development	3.97	0.93
Total	4.06	0.64

This table shows means and standard deviations of the sample responses.

When we tested the sample characteristics and the components of the innovative organization we found that the work period and almost all components of the innovative organization were significant. Table 3 shows the sum of squares, mean square, and *F*- test. The statistics revealed that the employees that had different work periods had different opinions concerning all of the components of the innovative organization, except the company infrastructure dimension.

Findings from the Qualitative Method

Almost all employees understood the innovation concept, that innovation implies new products, services or processes. The innovation novelty has multiple levels: new to the world, new to the nation, new to the organization, or new to the market. However, the importance of innovation is the extent it can be commercialized. This company planned to create a learning organization and to transfer the basic innovation concept to all employees.

Table 3 Work Period and the Factors of Innovative Organization

Factor		Sum of Squares	*df*	Mean Square	*F*	*Sig.*
Company Infrastructure	Between Groups	3.45	3	1.15	1.55	0.20
	Within Groups	109.92	148	151	0.74	
	Total	113.38	151			
External Confidence	Between Groups	30.95	3	10.31	11.83	0.00**
	Within Groups	128.52	148	0.86		
	Total	159.48	151			
Clear Objectives	Between Groups	10.76	3	3.58	6.39	0.00**
	Within Groups	83.08	148	0.56		
	Total	93.85	151			
Team Constitution	Between Groups	14.00	3	4.68	9.95	0.00**
	Within Groups	69.44	148	0.46		
	Total	83.45	151			
External Influence	Between Groups	9.765	3	3.25	5.55	0.00**
	Within Groups	86.67	148	0.58		
	Total	96.44	151			
Freedom	Between Groups	8.40	3	2.8	5.59	0.00**
	Within Groups	74.04	148	0.50		
	Total	82.42	151			
Attitude toward Risk	Between Groups	12.14	3	4.04	14.73	0.00**
	Within Groups	40.65	148	0.27		
	Total	52.79	151			
Internal Confidence	Between Groups	22.17	3	7.39	16.91	0.00**
	Within Groups	64.69	148	0.43		
	Total	86.87	151			
Department Growth and Development	Between Groups	24.42	3	8.14	11.11	0.00**
	Within Groups	108.37	148	0.73		
	Total	132.79	151			
Total	Between Groups	11.33	3	3.77	10.77	0.00*
	Within Groups	51.86	148	0.35		
	Total	63.19	151			

*This table shows test of Work Periods and Factors of an innovative Organization. ** indicates significance at the five percent level.*

Moreover, all processes in the organization were based on the innovation process concept: idea generation, conversion, and diffusion. This could be seen from the development of innovative products and on-going research. In addition, top executives also played a supporting role in encouraging life-long learning of employees and creating external networking. When considering the components of the innovative organization proposed by Tid and Bessant, the authors grouped the company data from the case as follows:

1. Company Infrastructure refers to the resources, management models, and corporate structures that affect the operation. The company had tools and equipment, but for some scientific equipment, which was often less used and required high investment, the company contacted outside provider agencies. Further, the organization not only restructured to a flat organization, but also created a suggestion system that was a direct channel between employees and executives via e-mail. This created close contact among employees, departments, and top management positions.

2. External Confidence means the attitude and belief of executives about employees. In this case, top executives recognized the employees' capability and supported staff in attending training at technology institutions and development programs, including socializing the innovative values.

3. Clear Objectives refers to the company setting clear directions and communicating with employees in monthly meetings and on prime occasions. For instance, meeting president had focused on company vision, mission and strategy to ensure that all staff received the same directions before starting new discussion topics.

4. Team Constitution is associated with team member characteristics and the interaction between them. They often coordinated and shared information, such as production problems, new research and development knowledge, and customer needs among various departments. This information was essential for the innovation process, at the stage of idea generation, and all employees became involved in goal setting and corporate directions.

5. External Influence refers to the external environment, such as funding, new technology, and government policy that affect the organizational operation. In this case, The company was benefited from the biotechnology development policy framework. Therefore, the company had the cooperation with the National Innovation Agency (NIA) and the National Science and Technology Development Agency (NSTDA) in funding support and knowledge transfer, including also work with the Science Park, universities, educational institutions, and research and technology agents.

6. Freedom refers to the company permitting the employees to work on their own, express their opinion and delegated authority in decision making about their job. This helped to encourage the creativity of employees because the staffs' proposals and ideas would not be blocked, thus bringing about a sense of belonging and creating the challenge of work.

7. Attitude toward Risk refers to the company investing in high technology projects with high risk. However the staff understood characteristics of innovation that sometimes may face failure and sometimes may be successful, as well as have the ability to learn from past experience.

8. Internal Confidence refers to trust within a group or a team, and the belief in the team members' potential. This company not only made an effort to create a happy work place and quality of work life, but also focused on open communication to retain good interpersonal relationships and trust in the team.

9. Department Growth and Development involves emphasizing continuous learning of the staff at all levels. Especially in the research and development unit, the company invited technology experts to be employee consultants, and coaches. Further, the company highlighted on internal and external training programs as well as set clear employee career paths.

CONCLUSION

In biotechnology development policy framework, Thai local companies have realized how to compete in the new business environment and innovation strategy has become an alternative way to achieve a competitive advantage in the long run. Therefore, several Thai companies have changed their strategies and action plans.

However, successful innovation is not easy, and it depends on several factors. This study aimed to examine the components of the innovative organization and used the mixed method to gather the data on a well-known biotechnology firm that categorised two parts. The qualitative collection used focus group discussion in the R&D unit. The quantitative section involved collecting data from 152 employees via questionnaire.

The findings revealed that the survey and focus group discussions aligned. The staff understood the concept of innovation, and all of the components of Tid and Bessant's innovative organization concept affected the company's innovation process. When considering the quantitative data it was found that the means of all factors (company infrastructure, external confidence, clear objectives, team constitution, external influence, freedom, attitude toward risk, internal confidence, and department growth and development) were not different and the work period affected the perception of employees. This implies that all components were important and that companies needing to set innovation strategies should be concerned about these components.

Finally, the employees mentioned organizational development and the idea that the company should emphasize creating an innovative culture and establish innovative behavior, idea generation, and idea implementation as a performance appraisal standard. Moreover, the employees also offered some opinions regarding the government. They indicated the government must take a proactive role in promoting and supporting biotechnology firms more than is apparent with current action.

This study had some limitations, as the population was small and included only a single company. As such, the results are not complete or reliable. Further study that increases the size of the population and compares the results with other biotechnology companies or other industries would be beneficial.

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ACKNOWLEDGEMENTS

This study was granted by The 90TH Anniversary of Chulalongkorn University Fund (Ratchadaphiseksomphot Endowment Fund)

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