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THE PUBLIC SECTORS' PROMOTION TO THE CREATION OF INNOVATIVE PRODUCTS AND SERVICES

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ABSTRACT

The article entitled "the Public Sectors' Promotion to the Creation of Innovative Products and Services" had objectives to study and promote the creation of innovative products and services in Thailand by reviewing the literature concerning concepts and theories involved in innovation/ innovative organizations and the promotion of the creation of innovative products and services of public sectors in Thailand consisting of the cabinet, Ministry of Science and Technology, Advisory Committee to Develop an Innovative System of Thailand, Small and Medium Enterprise Promotion Office, and the Securities and Exchange Commission. The data were also collected from abroad such as South Korea, Singapore and European Union. It was found that there were stages of public sector's policies to promote the creation of innovative products and services. The first stage included 1) the support for the expenses in doing research and developing the country's innovation and 2) the reform of the incentive system, regulations and the laws that impeded the implementation and exploitation of research and innovation. The second stage was to support the researchers by promoting the quality of the teaching and integrating science, technology, engineering and mathematics. The country focused on training which aimed to develop mentors for entrepreneurs and to give support g for further research for the commercial interests. The government had policy for marketing support by giving the opportunity for research and innovation that had never been released to enter the commercial market without competing with foreign products. The government was First buyer and promoted business excellence to the international standards. To the reform of laws and regulations, the government provided tax incentives in order to support researches and development in private sectors. Moreover, the government had policies to buy innovation on the list with the special procurement method. This enabled SMEs to develop innovation of business model by developing the entrepreneurs' network, mutual vision, co-location, mutual use of instrument, including follow-up of technological development.

Keywords: The Public Sectors' Promotion, Innovative, Products, Services

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Background and Significant Problems

The globalization trend under capitalist economic system and economic unions, for instance, ASEAN Economic Community or AEC has influenced several organizations to adjust themselves for survival. In consequence, every organization has to learn and to adjust their selves because only learning organization is able to survive the changed world. They have to collect, mix or create new knowledge which has never been discovered before and this knowledge will increase value of products, process or new services by focusing on reducing cost of a product or cost of service (Ralph, 2003). Many organizations in Thailand give priority to the creation of innovation. They try to create and increase their capacity for the success of their organizations in organizational innovation. It is regarded as a significant mechanism which helps force the organization to invent new products in order to expand its business or to elevate its business value.

The progress of the today world originates from technology and innovation. Companies around the world pay attention to the development of innovation and technology. When considering cost of production and of service which applies low innovation and technology, the true value of products and services, however, is knowledge and idea or people from that product or that service. The example is the capital cost of IPhone amounts THB 6,000 but the sell price reaches to THB 20,000. IPhone products have been studied and tested in the market for long time until it came out to respond consumers' demand. This is value added from the development of technology and innovation (Kingkaew, 2014).

Presently, the promotion of government innovation in Thailand is feeble in science support factor, technological factor and innovation support factor which will be a new learning for application for value added of products and services. According to the economic rating competition by IMD and WEF, Thai science and technology still remains not well. The indicator analyzed from investment in research and development, investment in scientific and technology foundation, quantity of research and development personnel, quantity of patents and the protection of intellectual properties. All of these, they become limitation in using science and technology learning to support competition capacity of the country. Whereas related sections under researching system lack integrity of inter-working and efficient mechanism in connection building among private sector, public sector and community (Office of National Economic and Social Development Board, 2011).

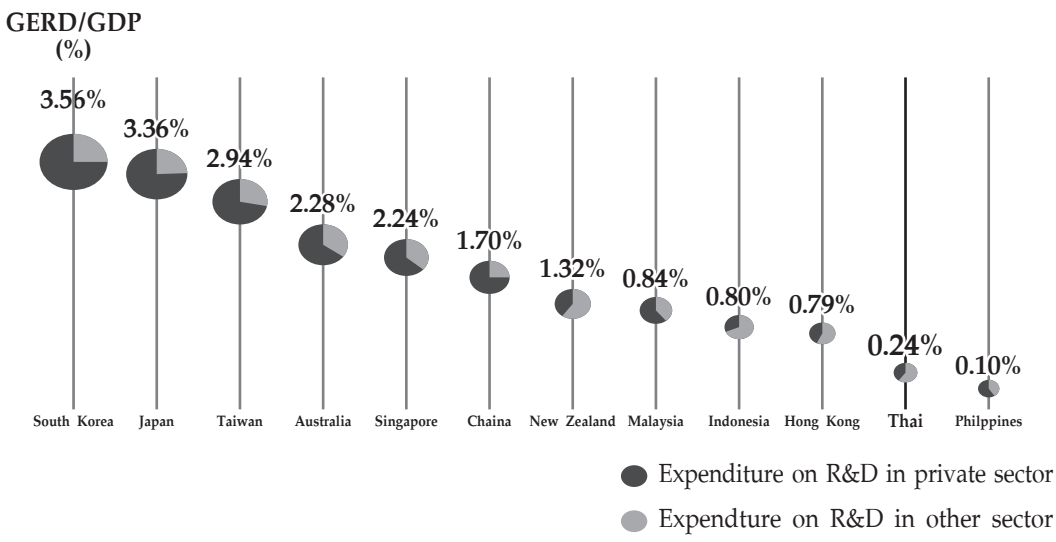


Fig 1 Gross Expenditures on R&D/GDP and Gross between Private Sector and Others of Countries in Asia-Pacific 2009 (International Institute for Management Development (IMD), 2012)

Gross Expenditures on R&D: GERD per GDP of Thailand is a little bit low or 0.24% of GDP while other countries in Asia have high GERD which are South Korea, Japan and China. Most invested in private sector more than 60% while Thailand invested in private sector just 40%. The top 5 of Thai industries with high expenditure on R&D are petroleum, chemicals and chemicals products, machinery and electronic appliances and foods and beverages (Office of Securities and Exchange Commission, 2014).

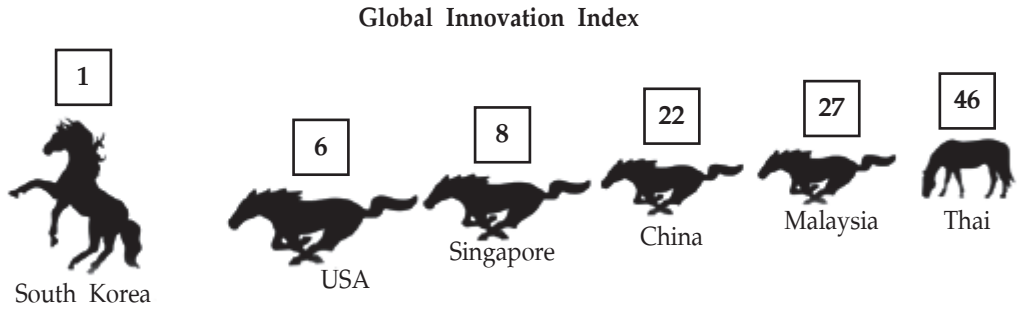


Fig 2 Global Innovation Index (Bloomberg the company, 2015)

According to fig 2. Global Innovation Index by Bloomberg 2015, the evaluation was considering from 6 factors which are investment in R& D, manufacture of high value added products, number of companies in high-technology group, educational level of workers, number of researchers and quantity of patent issuances. Thailand stays in 46th while South Korea is the top 1 (Bloomberg, 2015). As a result, the present world economy has stepped from the age of heavy industrial dependence to the age of creative industry depending on knowledge learning, technology and innovation. Many countries focus on building their own economy based on the knowledge learning. For Thailand, we cannot avoid this path. How much do Thai companies promote innovation creation of products and services, comparing other countries in ASEAN and the world? (Kingkaew, 2014).

Objectives

To study on the promotion of innovation creation for government products and services.

Scope of Study

Study on the promotion of innovation creation for government products and services in 5 Thai organizations which are Thai Council of Ministers, Ministry of Science and Technology, National Advisors of Innovation System Development Commission, the Office of SMEs Promotion (OSMEP) and the Securities and Exchange Commission, and in outside countries consisting of South Korea, Singapore and European Union.

Ideas and Theories

Innovation Ideas and Theories

The meaning of "Innovation" defines to the turning of an idea into touchable material, to mix and/or to synthesize existing knowledge in order to create a worthy and important product, a process or a service. There are 2 major types of innovations which are 1) the adaptation of existing form or technology or, in other word, an improvement for the better and for more recent reformation and 2) the completely alteration of existing object or, in other word, the newness. For this type of innovations, there are many products or services which tend to replace existing technology (Richard, 2013).

Innovation is a process of idealization to produce a product and a service or to use for the benefit. This is the result of creation which is the main condition of innovation. Creative idea is ability in combining ideas to create uniqueness or in connecting ideas to make a relation and to cause benefit. With

its principle, the creative idea presents new thinking to improve quality in the organization, whereas the innovation applies this idea in operation and study on personal creative idea and on support to cause creation among members in the organization (Certo, 2009).

Hamel (2009) stated about the definition of management innovation that it is anything which can mostly adjust the ongoing management method or change existing organizational form significantly and when the change occurs, the organizational goal will progress. To say simply, the innovation management is an action to change the working method of manager and to increase the operating result of that organization.

National Innovation Agency (NIA) (2010) gave the definition of organizational innovation that it is an organization which support personnel innovation inside it. These personnel will create innovation by using various factors. Thus, the innovation organization consists of various elements and complicated process. The organization which supports internal personnel innovation, is able to compete and grow their business in a long period (Vrakking, 1990, p. 95). Therefore, directors and organizational developers must understand its characteristics, its elements and innovation management so that their company will be the true innovation organization in the present day and in the future.

Regarding the creation of government innovation, Osborne & Brown (2005) said that to create the government innovation in its organizations is composed of 4 approaches as follows:

1. Rational management approach, this idea came from the view toward the system under logical thinking, regarding the organization as a designed tool with an aim to reach the specific target which is the principle of decision while the organizational structure stems from its inner behavior. The process starts from identification of operating result problem or gap of the organization and the necessary tool for this idea is the cause analysis to find the answer of gap during work which will lead to innovation process ideal.
2. Political negotiation approach, this idea is based on natural system perspective which views the organization as a place gathering people and groups of people who have different goals and some targets differ from theirs organization. This thinking concerns on the complication of target and the importance of unofficial structure and of sub groups in the company. It tries to control organizational politic in order to create innovation; therefore, the process of this approach is composed of the identification of stake holders who influence the innovation.
3. Building block approach is an idea to cope with organizational innovation developed by Borins (2001). Its principles relate to innovation in the public service organizations that the innovation requires friendly innovation culture, support from directors, rewarding and the use of resources and capital. The innovation culture needs to gather the difference of people's thinking in order to create new idea about public services. The said principle is regarded as a group for creation of public service innovation.
4. Learning organization approach is regarded that the organization is too complicated to manage with the same old method; consequently, the innovation management must gather the perplexity of modern organization in order to adjust with the environment or called Thriving on chaos (Peters, 1988).

According to the 4 approaches in managing innovation of public services, what we need is the use of contingent approach which means there is none appropriate to do. All of the approaches provide different results depending on situation. As a result, directors must select an approach and skill which is appropriate to the each innovation.

The technology network theory of innovation (Lundvall, 1988) under title "Innovation System" provides its hypothesis as follows:

1. Organizations and institutes whose roles relate to innovation creation should connect and exchange views with each other, for example, the sender delivers institutes/organizations who advice government units to government research institutes, universities and others.
2. The more strength, the more connection continuity, the more interaction and the more discussion with external institutes, the more encouragement in

innovation data transfer, it results to an increase of opportunity of the organization or the institutes which will benefit to their innovation creation.

3. These connections comprise technical connection or marketing connecting technology and innovation data network. However, this theory gives priority to technological connection more than the others.

In consequence, this theory explains that the innovation comes from the combination of touchable capital and untouchable capital which are technological network, assisting the organizations/ institutes increasing its capacity in absorbing innovation data.

To conclude, the innovation is to apply new idea in the production process or service or creating new product which may positively affect in one way or another or multi aspects in order to have advantages in the present world competition when the environment surrounding has been changed unceasingly, resulting in continuing creating innovation so that the organization will be able to respond the alteration in time.

Innovation Promotion Method of Thailand

Government Policies

Government policies are significant factors in promotion of innovation creation in the country. The government as the national policy planner must stimulate and encourage innovation creation which will lead the country to have strong and sustainable economic system development. For Thailand, the cabinet announced the policy number 8 about the development and promotion the use of science, technology, R&D and innovation. The government pays attention to further research and development and to create innovation into modern production and service (The Cabinet, 2014) as follows:

1. Support to raise expenses of the country's research and development to focus on the target not lower than 1% of national income and the ratio per private section is 30:70 in accordance with The National Economic and Social Development Plan. In addition, to increase the country's capacity in the competition and progress as same as neighbor countries who are underdeveloped countries, this is also to arrange management system in science, technology, research and innovation for its unity and efficient connection with private section.
2. Urge to build the innovation society by supporting educational system which connects to science technological engineering and math, to add human resource in sufficient majors, to relate learning with working, to appoint government research personnel enable to work in private sector and to allow medium and small industries to access technology with the collaboration of government unit and educational institutes.
3. Reforming motivation system, regulations and laws which burden to the use of research, encouraging regional or provincial research and development plan in response to local demand and supporting commercial use from research and development work by promoting collaboration among university, government research units and private sector.
4. Promoting large project investment of the country for instance, railway system, electronic automobiles and water and waste management by using study research and development and Thai innovation as seen appropriate, it must apply foreign technology, equipments, materials and other goods which result from the research. The government must provide procurement policy for facility in order to have opportunity in technological de development for the country. In case of needing to purchase materials, equipments or technology imported from outside countries, there should be conditions in technological instruction for self-dependence in the future.
5. Improving and arranging scientific and technological infrastructure including research and development and innovation which are the basic structure of significant wisdoms in further step of commercial use entrance in industrial sector to be ready, up-to-date and covering around the country such as the development of information technology system, analysis center, laboratory, institute and research center.

Recently, the Thai government has its role in supporting the creation of science, technology and innovation for example, (1) finance such as tax support for the business who encourage science

based development (i.e. double deduct research and technology development expenses) by offering low-interest loan or co-invest or supporting fund to the business and educational institute for innovation research development., (2) business and educational institute for innovation research development such as technological business incubator center or intellectual properties advice, (3) infrastructure and facilities such as Thailand Science Park and Software Park Thailand, (4) research and technology such as co-research, analysis and testing service or industrial advice and (5) human resource such as personnel training, database and specialists providing (Office of National Economic and Social Development Board, 2011).

Ministry of Science and Technology (2014) defined its principal policies and measurements for promotion of science, technology and innovation development as follows: 1) Offering tax privilege to support research and development of private sector. The government has specified the limit of tax privilege so that private sector is able to ask for tax deduction, 2) policy support for the application of Thai innovation with the government market in order to reduce expensive importation and to support the innovation development for responding the rapid advance of technology.

National Advisors of Innovation System Development Commission (2015) founded working team to outline the government's demand which is able to use product of Thai innovation causing beneficial use of research, development and innovation products toward the development of Thai economic system, especially in the government units which need innovation goods and need to reduce imports as an action to encourage the country's innovation system development. Besides, there was a proposal of creating marketing innovation goods to support and encourage Thai goods of the government units as follows:

1. Having for innovation procurement policy in Thai innovation list is able to provide special method.
2. Specifying the government sections which the authority purposes to make a procurement of products or services which enlists in Thai innovation list by allowing spending budget of products and services procurement on the list not less than 10% but not over 30%.

Regarding the mentioned procurement, the suggestions are as follows:

1. The listed innovation goods must be verified by related and credible institute to ensure theirs quality and security.
2. Should fix innovation procurement ceiling in the country by "special method"
3. Should categorize innovation goods and should provide roadmap in the Thai innovation development from government marketing survey, design, manufacture and verifying test before enter government procurement mechanism
4. Should identify clear demands before arranging policy proposal of creating innovation good market in the government units

The Office of SMEs Promotion (2014) said that the innovation promotions for SME business are 1) the government has its duty to support SME business and develop business model innovation to search for opportunity and value added with the promotion policy, R&D imbursement and building Science park and incubator centers as learning center and teaching knowledge. It must support the business collaboration between large business and SMEs to expand its market to regional or global market, 2) the educational institutes focus on training, managing coaching and mentoring system for entrepreneurs, support research extension for the commercial benefit, founding specialist/patent data centers and comparison system including index indicators for business group in order to compare SMEs operating results of SMEs and industry, 3) entrepreneurs focus on expand network of entrepreneurs/ co-vision, co-location, co-equipments and technological development monitor.

Office of Securities and Exchange Commission (2014) said about promotion of science-based innovation business of Thailand that it access capital fund from capital market (1) The project "Innovation and Creation shares, Proud of Thailand" of SEC coordinating with 7 public and private units to support science-based innovation business increasing

its capacity with capital market, as a tool while entrepreneurs understand benefits of founding from capital market and exchange opinions or negotiate business investment, (2) Offering privilege to venture capital business in investing science-based business by termination of capital gain and dividend for the fund and investors in the fund. (3) The public sector cooperates to arrange or co-invests in VC funds of private sector and (4) considering the possibility of intellectual properties development and invest instrument in IPRs.

Innovation Promotion Methods in Outside Countries

South Korea

The massive success of South Korea is very interesting. Within 20 years, its government began to percepts that if they want to continue develop the country's industry for sustainability so that their goods qualities surpass the rivals, South Korea needs to give more attention to its innovation creation. The dependence of foreign technologies is not the answer. South Korea's vision is to plan exportation strategy in appropriateness with the capacity limits of the country and the trending demand of the global market. After South Korea became the leader of electronics industry in 2013, the government selected capable industry which has some chances to grow in the global. The massive innovation development of South Korea originated from quality educational system in general education and vocational education, owning to the fact that every president pay attention to their people's education all along. Therefore, when the government started to invest in science and technology for fifty years ago, the country has possessed sufficient human resource to turn the investment into new technology in its industries. The success of South Korea is a guarantee that the development of education quality is firstly necessary to increase the country's capacity in business competition because other factors will not be wasted (Watcharaprapapong, 2015).

Singapore

Singapore is looking forward to enlarge SME business in the future by supporting research and development and credit for machinery improvement in manufacture, especially manufacture of computer and of communication device and a focus on increasing production efficiency of SMEs business by pushing SMEs into organizational development process to be the proficient SMEs business.

"SPRING" Standards, Productivity and Innovation Board of Singapore encourage production and capacity in organization competition for the prosperity of Singapore's economy. SPRING has coordinated with shareholders from regions for financial enterprising aid, for management, for technology and modernity and assisting to enter the new products and services market. Furthermore, SPRING has developed and improved international standard and warranty to enhance its capacity in competitions and support trading. The 3 production promotions are as follows: (Department of Industrial Promotion, 2014).

1. Productivity and innovation are composed of the promotion of excellent business into international standard, the enhancement of capacity and worker's quality, including service quality.
2. Standards and quality – SPRING will perform its duty of corporate governance for state enterprises and industries of Singapore, to follow international standard and quality so that its goods and services enable to enter foreign market and to reserve the environment.
3. SMEs and domestic sector consists of upgrading small and medium enterprises and transforming industry in order to boost productivity and to reduce cost of production.

European Union

Digital Agenda for Europe (2014) has assisted the government for its procurement of innovation goods which is Pre-Commercial Procurement of Innovation in EU. This is EU policy to offer opportunity to bring new innovation, which has not been released to the market, into the market without competing with foreign goods. The government units will be the first buyer using Risk and Benefit Sharing between buyer and suppliers to be the main reason in being excluded from 2004 Public procurement directives of WTO in order to launch GP policy

which supports innovation of the country. The Pre-commercial procurement of innovation relates to 3 phases of innovation development durations:
Phase1- solution exploration, feasibility study R&D
Phase2- R&D up to prototype
Phase3- R&D up to 1st batch of pre-commercial volume, validated via field tests
There are development procedures between buyer and sellers when they share their demands in response to their sharing demand during R&D while buyer, as the government, can terminate the development as seen appropriate.

Conclusion

Table 1 Conclusion of Innovation Promotion Method of Thailand and Outside Countries

	The Cabinet	Ministry of Science and Technology	National Advisors of Innovation System Development Commission	The Office of SMEs Promotion	The Securities and Exchange Commission	South Korea	Singapore	European Union	Number	Rank
1. Support in increasing expenses for innovation R&D of the country	P	P	P	P	P	P	P	P	8	1
2. Urge to create innovation society by supporting educational system which connects science technological engineering and math. There is coaching and mentoring system for entrepreneurs and supporting to develop research for commercial benefit.	P	P	P	P		P	P	P	7	2
3. Reform motivation system, regulations and laws which burden to the improve of innovation R&D or the benefit	P	P	P	P	P	P	P	P	8	1
4. Support large investment of the country	P				P				2	6
5. Offer tax privilege to encourage R&D in private sector	P	P	P	P	P	P	P	P	8	1
6. Promote policy in using Thai innovation with the government market, offer research which has not been presented an opportunity entering the commercial market without competing with foreign goods when the government is the first b uyer	P	P	P			P	P	P	6	3
7. The policy of innovation procurement which is enlisted can use privilege method	P	P	P						3	5
8. Encourage SMEs business enable to develop their own innovation business model	P	P	P	P	P	P	P	P	8	1
9. Develop network of entrepreneur/co-vision, co-location, co-equipment and technological development monitoring	P			P	P	P	P	P	6	3
10. Encourage the excellency of business to the international standard	P		P			P	P	P	5	4

Conclusion of the role to promote the creation of significant innovation goods and service production of the organization or the country that is successful in doing the action as in fig 3.

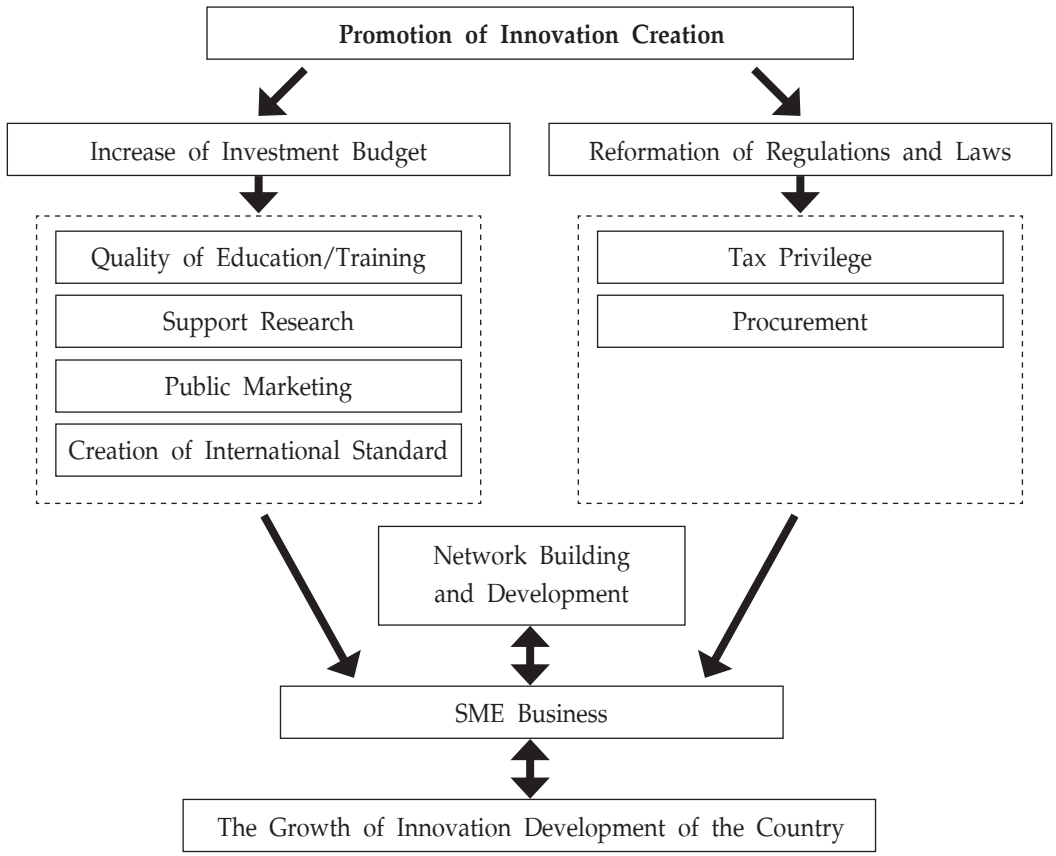


Fig 3 The Promotion of Innovation Creation of Thailand

According to fig 3, the promotion of innovation creation for government products and services has its principal policies leading to other activity promotions which are 1) Support the increase of the country's innovation R&D expenses and 2) Reform motivation system, regulations and laws which burden to the development of using R&D or the benefit. When the principal policies have been proceeded, it will come to the second step which is to support researching, to urge innovation society building by promoting educational system which connects scientific technological engineering and math. Moreover, they focus on training, arranging coaching and monitoring system for entrepreneurs, supporting the development of researching for commercial benefits. The policy support on the use of Thai innovation with the government market is offer the research which has never been presented an opportunity path to release in the market without competing with foreign goods when the government becomes the first buyer and promotes business excellency to step into the international standard. In terms of reformation of regulations and laws, it is to provide tax privilege to support R&D in private sector. The policy of innovation procurement which was enlisted is able to use special method by developing network of entrepreneurs/ co-vision, co-location, co-equipment and technological development monitoring.

Every related section, both public and private sectors, must collaborate to design support plan and to promote more creation of innovation products and services in business sector as the basis of business and industrial sectors of Thailand in entering the global competition

Discussion

The significant characteristic in the promotion of innovation creation in the countries which stay in high ranks of Global Innovation Index is the business investment in R&D. The business sector's role will

be more than the role of public sector in this investment. Whereas in the developed countries such as South Korea, Singapore and European Union, only Samsung company, it spent its investment in &D for over USD 10,000 or 20% of the country's R&D investment. This conforms to Borins (2001) who stated that the successful innovation must receive support from directors, from rewarding and from resource and capital to create new idea.

To push SME business growing sustainably, it requires the innovation, due to the fact that the innovation has been accepted as a major factor to sustain the completion business, boosting capacity in competition and reducing cost of production. However, to create an innovation, the organization is unable to perform the action solely. It requires firm network to cause participation and opportunity in sharing resources, for instance, cooperating to use resources which are tools or equipments and information data ad knowledge, exchanging ideas, knowledge and accumulated innovation to each other so that the innovation gain ability and efficiency to operate their business. With conformity with Lundvall (1998), he explained that organizations and institutes who have the role in creating innovation should connect to each other and should exchange data. The more they collaborate, the more innovation data transferring which will be advantageous to create organizational innovation having connection in technique or technology, marketing and innovation data.

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