IMPROVEMENT OF PROCEDURE FOR BUILDING UP THE NEW TECHNOLOGICAL STRATEGY FOR SCIENCE-TECHNOLOGY BASED BUSINESSES IN VIETNAM

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Abstract:

Competitive advantage of science-technology based businesses (S&T businesses) is the use of new technologies. In their pro-active position, S&T businesses need to have a proper way for building up their S&T strategies. This paper proposes a procedure to build up the new technological strategies which would be applicable for Vietnamese S&T businesses. Here the discussions will be made about the methods of building up the new strategies and the meanings and limitations of this procedure. This is also a way to identify requirements towards contents of building the technological strategies for S&T businesses through visions and mindset of strategy makers. The objective of this research is to provide S&T businesses with an approach to build up new technological strategies in their activities to produce competitive product in domestic and overseas markets.

Keywords: *S&T business; Technological strategy.*

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1. Introduction

In 1911, in the first edition of his book entitled "Economic Development Doctrine", Joseph Alois Schumpeter had introduced the notion "Innovation" and considered it as driving force for economic development [5]. He applied the historical practice of technological renovations to intepret the development cycles of capitalist economy. Every development cycle coincides with a high move of discoveries and inventions of that time. In addition, there were also short-term and midle-term economic development cycles which were linked closely to a series of important discoveries and inventions .

In 1942, Peter Drucker, famous Austrian economist, said, from the vision of business management, the two important activities of a business are marketing, and renovation of technologies and products [6]. While the marketing is to satisfy present needs of consumers, the renovation of technologies and products targets future needs of consumers. Businesses would be kicked off the market if they do their business without capabilities, tenacity and patience in their efforts for renovation of technologies and

products in context of fast change of needs of consumers and tougher market competition.

Next, strategy researchers consider that the time and the know-how are sources for competitive advantages [10,11]. However, technologies and strategies present two very complicated matters of which the interface is seen through the impacts of technologies to productivity and quality of products. New technologies are usually developed and applied in large businesses of new technologies based businesses [12]. Actually the theories of building technological strategies are not oriented only to large corporations but to those with ambitious plans to master new technologies [4,13].

Being newly established, S&T businesses in Vietnam have not many activities for sharing or absorbing new technologies. The absorption of new technologies pass at individual level but not the one of organizations [1,2,3]. Intellectual property management remains quite novel and is not institutionalized in S&T businesses. This situation means that S&T businesses in Vietnam are not pro-active in building their own new technological strategies. By other words, the procedure of building up and implementing technological strategies of S&T businesses remains incomplete.

This paper is to provide Vietnamese S&T businesses with a procedure to build up strategies for development of new technologies in order to enhance their competitiveness.

2. Proposal of a procedure to build new technological strategies

Let say the procedure to build new technological strategies would be put in context of interaction at business level. According to this assumption, the procedure to build technological strategies will describe an approach based on simplification of practical experiences. Globally, this procedure covers 4 stages in building technological strategies as seen in Figure 1

2.1. Stage of creation of driving forces

S&T businesses need to be based on new technologies. By other words, new technologies are crucial for production and service activities of S&T businesses. So, S&T businesses need to achieve objectives of development and application of new technologies from ideas to production practice (P1, Figure 1). In the first stage, in order to come to their own roles, S&T businesses need to identify directly connected factors such as sponsors, technologies, clients, competitors, innovators and etc. Inversely, S&T businesses need also exploit exterior control factors such as age of

technologies, control limits and macro-economic regulations, change of minds of consumers and etc., as well as interior factors such as value chain. By this way, S&T businesses would identify orientations for searching ideas and required inventions which can become opportunities or threats to their business. (P2, Figure 1). From an identified idea or invention, S&T businesses need to separate two aspects: *first*, capabilities to apply of innovative findings in connection to existing resources; and *second*, competition position of competitors (P3, Figure 1). Next, S&T businesses need to combine new technological strategies with other strategies (P4, Figure 1).

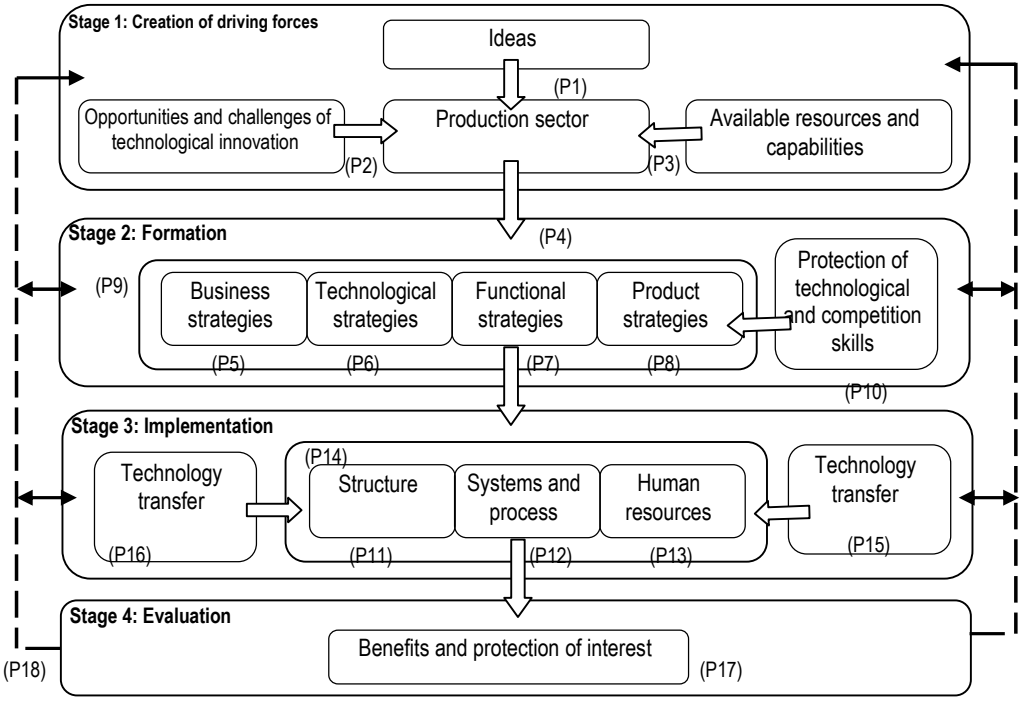

Figure 1: Simplified scheme of building up technological strategies for S&T businesses

2.2. Stage of formation (starting up)

Technological strategies make an integrated function of S&T businesses. In this second stage, S&T businesses need to identify business strategies to solve market problems of market demands (P5, Figure 1). In addition, S&T businesses would define their own technological strategies (P6, Figure 1). They may become the first to introduce products (advancing strategies) or to apply the technologies that others already used (following strategies). After having identified business strategies and technological strategies, S&T

businesses need to modify organizational structure and use of human resources to adapt to new functions (P7, Fig. 1). Another important aspect is the selection of new technologies which is, in fact, the answers to the questions: *when* and *how* to pass over a technological level. S&T businesses need to sustain pressures, maybe of global nature, if they have certain activities or functions in value chains in other countries. Main interests of global businesses are included in their capacities to use better their knowledge on technologies and markets to produce new products (P8, Fig. 1). In order to apply easily the four strategies (strategies of business, technologies, functions and products), S&T businesses need to coordinate these strategies with some other organizations because the S&T businesses themselves do not have resources and capacities enough to be able to carry out them alone (P9, Fig. 1). Thanks to necessity of strategic coordination, S&T businesses monitor better the happening situation in competition. This move would provide information feedback and S&T businesses need to assess them for commercial purposes (P10, Fig. 1)

2.3. Stage of implementation

In this third stage, S&T businesses need to set up an integrated structure for coordinating and pushing up the development of products (P11, Fig. 1). By the same way, they need to set a system to monitor agreements and information flows to further decision (P12, Fig. 1). Next, activities in these businesses require personnel with knowledge and capacities to keep various activities running in value chains (P13, Fig. 1). Then business managers need to coordinate activities between structures, systems, human resources to meet targets (P14, Fig. 1). They need to know their strong and weak points to carry out technology transfers (P15, Fig. 1) At the same time, businesses may get other State resources for improvement of their activities (P16, Fig. 1).

2.4. State of evaluation

In this stage, S&T businesses want to get competitive advantages. For these targets, they need to apply different strategies in their activities such as participation in associations, networking works and networks, etc. (P17, Fig. 1).

Globally, this process is developed in an ordered chain of steps. But this does not mean that they are independent. The process of setting up technological strategies is repeated cycles. In every stage, managers identify elements of opportunity, then they, as strategists, identify additional opportunities and adjust previously set-up visions of their businesses (P18, Fig. 1).

3. Evaluation the practice of the process

Among published works in international magazines, many type of technological processes are set-up, namely *A dynamic model of process and product innovations by Utterback and Abernathy [7]; Technological discontinuities and dominant designs*: A cyclical model of technological change by Anderson và Tushman [8]; Towards a Framework for dynamic technology strategy by Chiesa và Manzini [9] and others. However, the concept of S&T businesses is novel in Vietnam and it has a specific nature then the application of some procedures of technological strategies is not very clear [1,2,3]. The above proposed model is to complete the procedure of building technological strategies in S&T businesses. The procedure shows that businesses act top down to protect their benefits and also restructure their strategies as reflected in Fig. 1 (see P18, Fig. 1). The most important point in this procedure is the convergence of many factors. *First*, the intensified innovation in relatively stable and uncertain context. *Second*, the importance of reasonability since managers need to consider all the possible scenarios.

This procedure does not exclude the possibility to start innovation process at any component. For example, in order to meet technological needs by businesses, it is possible to alternate the position of elements provided that businesses get the highest benefits. At the same time, businesses need to orient actions to some concrete elements if they possess required capacities to maximize advantages of new technologies. Otherwise, an eventual change in the logics which control activities of businesses may lead to other concepts in strategic cooperation and this may lead to changes of business strategies. Finally, we can identify 18 theoretical statements related to components from P1 to P18 in Fig. 1 to link different structures in the process. Every proposal may be different for every study case. This makes the process become highly integrated.

4. Limitations and related problems

Even this study is designed on basis of constructive approach, it deals with some aspects which should be hold in strategic mindset. Further studies need consider the practical context of S&T businesses in Vietnam and they should be carried out carefully. This means that there are some limitations of the procedure to explain the limited number of S&T businesses. The procedure combines theoretical concepts because the author had used different research results to link concepts. This study had been conducted as a project which is set up systematically and target oriented. This study gives also the author chances to develop other ideas for future studies. The

exactness, integrity and importance of theoretical statements present the contents of next studies. This requests that the announced procedures to build technological strategies should be considered and applied in conformity to Vietnam practice. The implementation of such a procedure would require other proposals and models for further pilot studies.

5. Conclusion

In this study, the procedure to build up technological strategies covers the process to build up strategies to develop new technologies which targets S&T businesses. Regarding managers, the procedure presents a process where managers carry out themselves the assessment of the time and future problems of businesses. For successful management of S&T businesses, it is crucial to balance unstable elements of technologies and potential strategic interests. The values of a suitable strategy for technological development would be the best protecting cover against competition. Also, it provides a concrete measurement and it permits a business to form an effective approach to meet the objective and unavoidable market demands./.

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