

OPEN INNOVATION AND ITS APPLICABILITY IN VIETNAM

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Abstract:

Open innovation is a type of non-traditional innovations or it is, in a more exact way of speaking, a new concept to do innovations differently from the ways they have been conducted. The Open innovation is considered as strategy for innovations in the era of knowledge economy and scientific and technological (S&T) revolution. In this new era, there are three factors which attract our attention, namely: i) the technological amplitudes always go beyond capacities of any organization; ii) the changes of technologies go with very high speed; and iii) costs of investments for research and development (R&D) are huge which a single organization has almost no way to afford. In the traditional way to do innovations, the process always passes within a single organization and this type of innovations is usually called "Close innovation". In the new concept innovations, the process is coordinated between numerous organizations for settlement of a big size problem because of the three above noted reasons. Then the new concept innovations are called the "Open innovation".

This paper deals with basic matters of Open innovations with purpose to introduce the aspects of the Open innovation, to exchange related visions and to make notes on its applicability in Vietnam.

Keywords: *Innovation; Close innovation; Open innovation, R&D.*

Code: 15081102

1. Aspects of Open innovation

During early decades of the XXth century, largest technological companies and technologists of the world took the creativity as successful keys to lead the market and to introduce new products and technologies for markets. R&D units of these organizations were taken as a machine to deliver potential ideas, to turn them into new products, to shape demands and to make new markets appear. In this strategic view, the competitiveness of organizations was based on internal creative capacities. The philosophy of success always located in spirits to be pioneer which is, in fact, the first to deliver new products and then to get the exclusive rights of their

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distribution in markets. Therefore, organizations do not hesitate to open purses for investment in R&D divisions and to own best individuals with outstanding creative capacities. This way was the model of endogenous innovations and was honoured as the successful model to be applied by numerous organizations for multiple decades.

The global economic crisis during 1970s had left a vacant space in industrial sectors of the world, particularly in field of technologies. Organizations and industrials had to face financial difficulties which force them to cut down expenditures and to re-structure business models. In this process, R&D units were first taken into consideration due to huge investment requirements for development of technologies. Tough problems were also raised with the costs to maintain excellent personnel as well as the decreasing trends of discovered potential ideas.

This economic crisis had put the world's economy in general and organizations in particular in position to have to make fundamental and global re-structuring measures. Then the appearance of knowledge economy caused great impacts to the context of R&D activities in organizations. Under pressure of practical activities, the limitations related to creative capacities of R&D units require enterprises and technological organizations to look for new strategies and new models for R&D activities.

Procter and Gamble (P&G), the US world-leading corporation in sector of consuming products, had faced the bankruptcy threshold when the crisis passed. P&G leaders had managed very fast to identify out new choices. At that moment, P&G was considered as the first model to remove fearlessly the fences confining its own R&D units. They took considerations between two options: i) owning the best R&D units coupled with huge investments to keep exclusive rights from made inventions (patents) and then new products in markets; or ii) re-structuring the model of activities of R&D units to reduce investment costs while still securing the creative capacities of the corporation. The decisions were made: P&G adopted to share its own creative resources with the outside world which was based on a strategy to promote strongly the partnership between the corporation and universities and research institutes in order to set up alliances for development of new products on basis of sharing benefits. Thanks to this strategy, P&G was successful to maintain creative capacities and to produce new products to meet market requirements. This strong forward move had turned fast P&G back to position of the world-leading company in sector of consuming products (*L. Huston and N. Sakkab, 2006*).

This lesson of success had immediately been found in focus on studies by numerous companies for application. Many big corporations, such as IBM,

INTEL, XEROX in US and SIEMENS in Europe, decided to break down the traditional mind-set which says: “*All creativities are resourced from endogenous capacities*”. Thanks to this change of mind they passed over the crisis and returned back to market-leading positions.

1.1. Innovation

“Innovation” can be translated into Vietnamese as “Doi moi” (*change to new*) but in practice we have already the term “Doi moi” which is used to indicate the global policy of the country. Then we need to clarify main and key features of “innovation” in our case to avoid confusing them. In many countries, the term “innovation” is not translated into local languages but held with the original transcription to reflect the basic concepts of the term. In many documents in Vietnam, the term “innovation” is accepted to be translated as “doi moi sang tao” (*change & creativity*) and we use this translation in this paper.

In fact, the term “innovation” has many interpretations since its appearance early the XXth century. Many scholars and researchers made efforts give their own definitions for this term. Globally, the “innovation” is a scientific term which requires clear definitions to identify the meaning of values. Many definitions, in multiple cases, are very long and not easy to understand.

Therefore among many available definitions we select the one given by Prof. Richard R. Nelson who stated: “*Innovation is the process to turn ideas into new products or improved products in fields of industry or trade or new approach in fields of social relations*”². This definition indicates clearly that the innovation is a process but not a result. The process includes many procedures, stages, tools, impacting factors, methods, relations and etc. But the core element in this definition is the objective to turn ideas to useful products or, in a more simplified interpretation, to turn intellectual knowledge to values (to be measured by financial and cultural tools).

1.2. Open innovation

Here also exist many ways to provide the meanings of the term “Open innovation” but mainly all of them are focused on its nature and contents to get distinguished from the traditional innovation which is called in many cases as “Close innovation”. During the late years of the XXth century, the “Open innovation” remained to be taken as a successful model in practice by large technological corporations. Researchers, in fact, did not pay clear

²*National Innovation System: A comparative Analysis* - New York Richard R. Nelson Professor of International and Public Affairs Columbia University, Oxford University Press, USA, Apr 11, 1993

attention to that. By 2003, it is the first time Prof. Henry W. Chesbrough³ from University of California, Berkeley, USA, in its work "*Open Innovation*" introduced officially the definition: "*Open innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively*" (H. W. Chesbrough, 2003, p. 43).

In this paper, we do our analysis being based on this definition which is considered as the earliest definition of this scientific term. Up to now, Open innovations become get really a largely expanded strategy to conduct innovations in numerous organizations, particularly in industries, technological enterprises and technological R&D organizations. In the world scale, we are observing the establishment of communities of researchers, businessmen, industrials and individuals who are interested in Open innovation⁴.

In his works, Prof. Henry W. Chesbrough also gave a definition for traditional innovations called "Close innovations" which means the creative capacities fully based on internal R&D activities.

1.3. Basic specific features of Open innovations

- *Shift of knowledge*: Differently from Close innovations where all R&D activities get confined internally within organizations which almost has no out-flows of knowledge. Now it is observed inversely in Open innovations where knowledge is moved in from outside sources through links and alliances in R&D activities in order to accelerate the discovery of potential ideas and to shorten research processes as result of inheritance of research outcomes of other organizations. From other sides, another out-flow of knowledge appears which is to promote commercialization of research results including intermediate products. This process helps to shape early intellectual assets in research process without needs to wait for the full completion of target products as it has been followed before in practice of modes of Close innovation.

- *Co-owned intellectual products*: Differently from the previously applied Close innovation where all R&D processes remained solely within organizations. This concept leads organizations to look for pioneer position and exclusive status of intellectual products. With application of Open innovation, inventions are made on basis of cooperation of many R&D organizations or joint sources of many investors, and then benefits would be

³Reference: http://en.wikipedia.org/wiki/Henry_Chesbrough

⁴Reference: <http://openinnovation.net>

shared in process of use of inventions. In many cases, new inventions are integrated on basis of inheritance of previously made inventions and then the final outcomes reflect clearly the share of benefits among component inventions used for making new ones.

- *Crowd knowledge*: Open innovation is the use of knowledge and potential sources of many organizations and individuals for implementation of innovations. In many cases this deal mobilizes the involvement of many individuals and might get the extent of social events. This type of innovations is called to be based on crowd knowledge.

- *Links, alliances and networking in R&D activities*: Open innovation offers chances to establish connections in R&D activities which mean alliances not only in single fields or regions but in a multi-sectorial and multi-national eco-system. This implicates the formation of a new R&D trend, a new business model and a new culture in field of innovations.

- *Joint share of financial resources*: It is a basic specific feature of Open innovation. Financial resources are identified and shared in very early stages, even since the formation of ideas through the so-called venture investments. This helps R&D organizations get early resources for realization of potential ideas. The finance sharing can be also made through commercialization of intellectual products which are inventions in majority of cases. This helps R&D organizations get some finances collected through sales of inventions and also reduce costs of high risky R&D activities through purchase of external inventions. The sharing of benefits is also made on basis of previously contributed investments. Here the finance sharing is the crucial factor to help the establishment of large scaled technologies to achieve the fully completed innovations.

In addition to that, the Open innovation also remains a practice related topic of regional nature. Therefore, in an actual context of application of Open innovation models, many other related specific factors might appear.

2. Open innovation models

2.1. Background from Close innovation

The mode largely applied among organizations is to set up a R&D center/unit/department/division/laboratory (collectively called “unit”). It is a machine to produce potential ideas and to turn development from ideas up to products. For realization of this process, organizations need a huge investment for searching excellent experts and outstanding individuals, and then mobilize them solely for their own service. Organizations apply legal systems to protect their intellectual properties developed from R&D units.

The achievement the organizations got from these activities is the pride to be pioneers in markets where the competition is highly secured by the exclusive rights bound to new products. Benefits which are generated from supply of new products granted with exclusive rights are partially extracted for purpose of re-investment in R&D units to enhance their capacities and to make them ready for next cycles of innovations. This model, by this way, is called Close innovation.

As described in Fig. 1, it is easy to note that all potential ideas get sourced from internal structure of organizations and oriented to target markets by endogenous efforts.

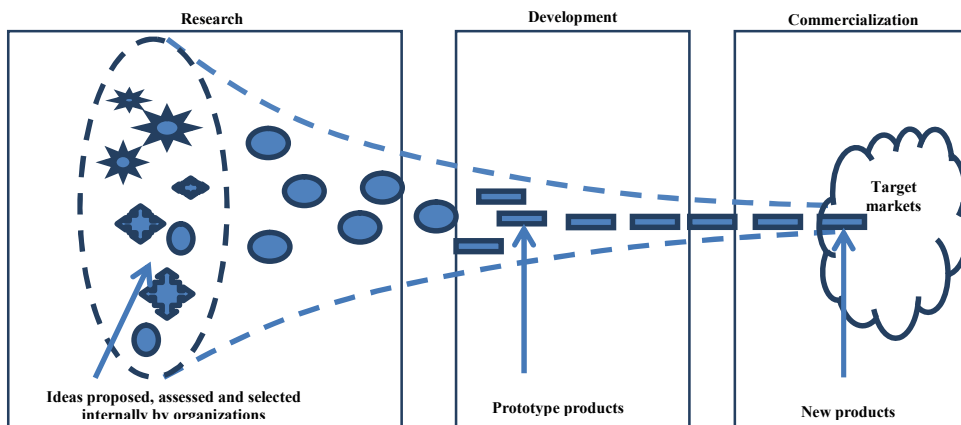


Figure 1. Close innovation model (*H. W. Chesbrough et al, 2006, p. 3*)

2.2. Open innovation model

Now, new problems appear in connection in R&D units, particularly the declining trends of potential ideas and the missing of practice sensitivity which means that the produced ideas cannot keep pace with demands of clients or markets. Then, organizations put down a question: “*Why does it happen?*” This question forced leaders of organizations to look for new solutions.

The analysis conducted for the above noted question leads to the following remarks:

- Fast increasing trend of intellectual labor forces in markets which is induced by the new trend of knowledge economy. This problem causes pressure of human resources onto R&D units in organizations;
- Raising difficulties in searching of excellent human resources for the own possession by organizations which leads to reduction of new potential ideas. Regarding the protection of their intellectual properties,

organizations face limited capacities for control due to needs of mobility of research human resources;

- External appearance of sources of venture investment which is offered for technology based start-ups. These newly established enterprises, even young and weak yet, possess many potential ideas.

This reality forces leaders to think about the search of external sources which means the shift from Close innovation (exclusive ownership mode) to larger extended cooperation of efforts for searching of new chances. This trend forces R&D units to change their modes of activities in the way to demolish “the confining walls”. The removal was started by the formation of knowledge channels which infiltrate across “the walls” and get access to markets. This helps organizations to reduce pressure on their commitments to provide continuous creativity. This new mode also helps organizations to shorten their cycles of innovations.

Open innovations are also considered as a model to encourage R&D units to fast deliver their research results to market through externally oriented propagation of knowledge which does not need necessarily to follow target markets. The externally oriented sharing of knowledge through sales, concession or franchise of invention related rights or technology transfer rules provides additional sources of earnings to keep on operation of R&D units. Organizations, through their sharing of knowledge, get chances to be linked largely and deeply with external communities. This helps secure new ideas and products to keep pace with demands of clients and markets (see Fig. 2)

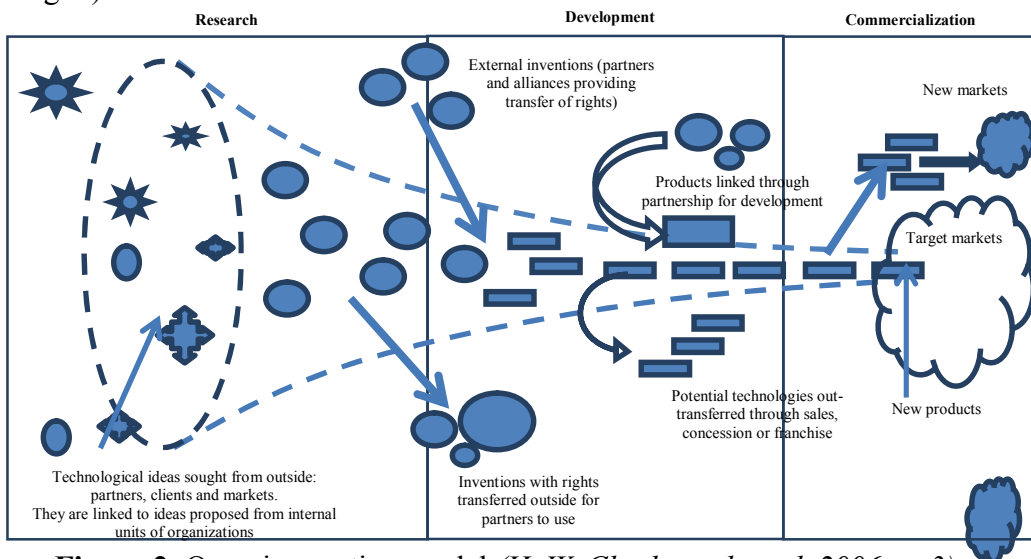


Figure 2. Open innovation model (*H. W. Chesbrough et al, 2006, p. 3*)

In the Open innovation model, research projects are combined between internal and external sources of forces which form knowledge flows for organizations to maximize use of opportunities to create early commercializable products and technologies.

When considering the Open innovation model, it is possible to propose three largely popular cycles for combination of internal and external capacities.

Cycle 1: Knowledge stream flows in. It is the way to organize the deep integration where partners are suppliers, clients of other potential organizations. This model is to target the enhancement of creativity of organizations for purpose of development. This cycle is applied usually by organizations with low R&D capacities where they can get innovations through sales or concession of invention licenses or transfer of technologies. In this case, the benefits are directly gained through internal innovations of organizations in order to improve their own efficiency of activities and competitiveness.

Cycle 2: Knowledge stream flows out. Knowledge here is understood as not only ideas but also technologies or inventions through sale or concession of intellectual properties of organizations to partners. This way diversifies opportunities to supply products to meet market demands through combination of technologies of the organizations and external partners. This cycle is usually applied by organizations with strong R&D capacities where they can apply or offer their intellectual properties. In this case, we have not only a propagation of knowledge but also important collections for re-investment of R&D activities.

Cycle 3: Combination of Cycle 1 and Cycle 2 through the building up of strategic partners and alliances in various fields of technologies. This cycle usually leads to establishment of a network of R&D organizations for co-implementation of large scale and potential technological projects.

In many cases, subject to the scale of activities of organizations, one of these cycles can be applied. The application of Cycle 3 would be the model of total innovations which permit organizations to enhance fast their innovative capacities. But the application of this model requires certain changes in organizational structures, capital structures, management procedures and internal culture.

2.3. Basic differences between Close innovation and Open innovation

When studying the two models of Close innovation and Open innovation, on basis of analysis of their natures and impact factors, the following points can be made for comparison:

Close innovation	Open innovation
Efforts are always focused on seeking and to possess outstanding individuals.	Outstanding individuals can locate inside or outside organizations.
Benefits gained from contribution of R&D activities are partially extracted for re-investments in R&D units.	External R&D sources are maximally combined with internal R&D capacities to create new values. Involved R&D units get their part of benefits in the created values.
In case of successful application of ideas, the organizations are the first to introduce products and technologies into markets.	In case of successful introduction of a product or technology, the involved organizations share new values and benefits.
Market acceptance of pioneer position of products and technologies (the first to introduce) means the success.	Attention is paid to effective business models which is more important than the objective to be pioneer in markets.
Competitiveness and success depend on good ideas.	Competitiveness and success depend on maximal use of external and internal ideas.
Principles of full control and exclusive possession of inventions are applied. Organizations have no way to share or get benefits from inventions of others.	Benefits can be gained from sharing of intellectual properties through sales or concession of licenses and rights. Partners can use inventions offered by other organizations and the latter can get benefits from these activities.
Permanent mind-set: - We can do and we will do. - New creations will belong to us.	Strategic mind-set: Looking for the best chances for innovations which can appear from any sources.
Passive ways to approach clients and markets.	Active ways to approach clients through mechanisms of information and knowledge sharing. Active efforts to approach markets.
Competitiveness depends fully on internal structures of organizations.	Competitions are accepted. Success is based on links with partners with sharing of benefits gained from markets.

Sources: (H. W. Chesbrough, 2003, pp. 21-41; H. W. Chesbrough et al, 2006, pp. 4-11)

2.4. Some attentions during shift from the close model to the open model

When an organization makes shift from application of traditional models (Close innovation) to application of new models (Open innovation) it should pay attentions to some aspects before planning the shift (*O. Gassman and E. Enkel, 2004*), namely:

- New potential ideas locate somewhere, outside or inside the organization. They can appear everywhere and no one is strong enough to possess them alone;
- Success does not fully mean the exclusive rights to new products and the acknowledgment of pioneer positions. The success is secured by

commercializable opportunities and created values;

- Single good and technology do not decide the sustainable success. A good business model will secure the sustainability of development;
- Intellectual assets and exclusive rights to inventions may not create new values or bring benefits to organizations if they cannot keep pace with market demands. Clients and markets are impatient factors which do not know and do not want to wait.

Despite of advantages and preference of choices by many organizations for application, Open innovation models exhibit certain limitations which can be interpreted as barriers or challenges for application. These remarks should be emphasized as a warning for organizations before they decide to apply them. Some challenges can be listed here when Open innovation models are going to be applied, namely:

- It is really difficult to find out the leading role in an alliance of invention owners;
- Identification of finance sources for activities has no way to be minor challenges;
- When internal and external human resources are maximally mobilized, leaders of organizations would face heavy pressure from selection of personnel, namely: Who will get involved? Who will be put aside?
- What will happen with products and technologies which cannot be integrated?
- What will happen when ties of link, cooperation, alliance get loose or are not trusted enough?
- Barriers can come from internal factors as signs of conservatism of traditional modes against application of Open innovation models. The skepticism raising during shift process and the problems raising in relation to internal culture aspects of the organizations are also big challenges on the way to move from close culture models to open community ones.

The practice confirms the actual trends to seek opportunities to apply Open innovation models, particularly for those organizations which remain yet operating in Close innovation models. Strategies for shift of these organizations to new models can be noted in directions: i) Re-structuring operational modes; ii) Building new business models on basis of innovations and enhancing links of communities; and iii) Intensifying the

studies and considerations of opportunities to apply Open innovation models.

Even those organizations which have applied Open innovation models still have certain concerns to enhance strength and effectiveness of these models, namely:

- Enhancing the application of information technologies. The latter should be taken as an important platform to form new mechanisms and to promote the networking of communities;
- Keeping on further considerations for selection of models mixed from concepts of Close innovation and Open innovation.

2.5. Some trends of studies in the world for Open innovation

In the world today, Open innovation attracted attention since long years and the study for Open innovation will get intensified during the coming years. Research activities will be focused on the following 5 topics:

- Tools to support management of Open innovation:

Information technologies and communication (ICT) are an important background of knowledge economy. They are not only to accelerate the evolution of technologies but also to play really important roles for propagation of knowledge. Actually, Open innovation has stopped being a story of a single nation or a single region. It can form partnership and alliances in technological innovations between many nations and get a larger scope of application in the world thanks to tools offered by ICT and Internet. Tools to support the application of Open innovation models have really become important “weapons” to enhance effectiveness of activities of organizations. The information sharing does not remain at threshold of units, divisions, departments or even companies but becomes solutions of social nature. Recently, thanks to ITC and Internet tools offered in practice of establishment and application of Open innovation models, we can get new concepts of crowd finance, crowd knowledge and etc. Internet based solutions such as BigData, Internet Things, Cloud and etc. are attracting researchers of innovations in general and Open innovation in particular.

- Organization culture when Open innovation models are applied:

It is very typical in field of technologies and specific industries that their nature needs the formation of their particular culture. Therefore, practical and specific studies are required to get solutions to build up the culture of linking and networking. Then, Open innovation would really promote its strength to enhance effectiveness of innovations. From another side,

regarding relations between nations, local cultural elements cause considerable impacts to process of integration and alliance establishment which require specific studies to make these connections really effective.

- Finance aspects of Open innovation:

It is really one of crucial factors to decide successful outcomes of innovations. The extending trend of scale and rate of integration of technologies in innovative solutions require the linking in financial investments. The circulation of intellectual properties in Open innovation models should be pushed up to become an important market. This forces managers to improve further studies on business models and relations in multipartite ownership structure, transfer and concession of intellectual assets, sharing of benefits, re-investment and etc.

- Business models and technology transfer in Open innovation:

Open innovation makes clear that the move of knowledge is the most basic and specific factor. The total business model has to clarify this focal point. The process and forms of technology transfer also turn around the sharing of knowledge and make the flow of knowledge appear. Therefore, specific topics of studies on modes to promote practical effectiveness of Open innovation have become challenges for Open innovation interested researchers.

- Scientific conceptualization of Open innovation factors:

A research trend gets clearly shaped, particularly in some European universities, namely: research for scientific conceptualization of processes and internal relations of Open innovation for purpose of simulating, scenario setting, trend forecasting and data analyzing to assist managers of various levels to get support tools for policy making process.

We can say the Open innovation in Vietnam is now in kick-off stages. We are favorably positioned to get useful international lessons which, jointly with studies of local practice, are able to make Open innovation models applied successfully in Vietnam

3. Innovations in Vietnam

During recent years, thanks to the State's attention for S&T development, Vietnam puts S&T into important positions in strategies of the country in direction of sustainable development and international integration. In this context, the innovation gets particular attentions. New policies are issued to build up a favorable environment to encourage innovations. Particularly, the sector of industries considers technological applications as key for

successful innovations, higher productivity and quality of local products and services, stronger enhancement of competitiveness and better opportunities to participate in global value chains.

Considerable efforts at macro level were made not only for improvement of legal frameworks but also for implementation of a series of national level programs. New organizations were established to implement policies to encourage innovations. But the practice is reflecting a picture to show that the innovations in Vietnam remain still at a very low level.

The report “*Science, Technology and Innovation in Vietnam*” by World Bank and OECD at end of 2014 made the following objective remarks:

Innovations in Vietnam: It is time to act effectively

- Capacities of science, technology and innovations are still weak at this stage and the National Innovation System (NIS) is still undeveloped and segmented. R&D activities play only secondary and supplementary roles in enterprises and State organizations;
- Increasing trends of competition in the world requires early investments for development of advanced technologies including R&D activities. The building of innovative capacities become an urgent challenge to make enterprises enhance their positions in global value chains;
- Under pressure of the coming demands, it is necessary to mobilize investments for science, technology and innovations. The objectives would be the enhancement, rationalization and reshuffle of the innovation systems with more attentions focused for the sector of enterprises (*OECD, 2014*).

Also, in this report, World Bank and OECD recommend considerations of major problems to promote effectiveness of innovation activities in Vietnam, such as: Stronger consolidation of public management mechanisms and policies for innovation systems, better supply of human resources for innovation, higher enhancement of roles of innovation in enterprises and early shift of enterprises into center positions of innovation systems.

In fact, enterprises in Vietnam begin paying attention to innovations but their efforts have to be focused on settle short term problems. They do not take the application of innovations as part of their strategies for international economic integration. This fact reflects a real situation of limited technological capacities of the sector of enterprises which can be confirmed to be simple and incomplete. The topic of R&D capacities of enterprises get low attentions and they remain almost absent (except only a

few State owned corporations which even also focus accents on settlement of short-term problems). This feature is very typical and specific for Vietnam.

Under another optic, we can see Vietnam has built a system of R&D organizations, particularly some of them are oriented to technological applications. These organizations have certain R&D capacities but they remain lonely in a distance from sectors of industries and enterprises. In context of market driven economy, these organizations have to face certain considerable challenges which come from habitual practice to be subsidized by the State provided investments for R&D activities. With an active way of approaching, these organizations make efforts look for opportunities to cooperate with the sectors of enterprises and industries which can be considered as a basic solution to make research results commercializable. Here the problem is to set up strategies for innovations even at the level of R&D units to bind creative processes with practical demands. On basis of that we will set up background structures to share benefits and to propagate knowledge from this area to the sector of enterprises.

The three take-aways to be remarked in the new era are: i) The scale of technologies required by markets gets increasing high; ii) The speed of technological changes gets faster; and iii) Investments for technologies become more costly. In context of Vietnam, these three elements turn the application of Open innovation to position of practical demands.

4. Conclusion

Since early years of the XXIth century, the Open innovation gets attentions of many researchers. Many studies were completed in connection with the establishment of a community of Open innovation. Studies were focused on analysis, diagnostics and assessment of activities of organizations before and after application of these models. Studies show clearly benefits from openness to make links to communities and to form alliances in technological R&D activities. In knowledge economy, the benefits gained from information sharing are beneficial not only for individuals and organizations but for the entire society also.

Even with that, further studies are required for every technological field, industrial sector, region and the whole nation to apply successfully Open innovation models and, by this way, to promote the whole innovative process.

This paper targets to introduce aspects of Open innovation and hopes to get more attentions and larger proposals for Open innovation related studies.

The Open innovation is expected to be an applicable solution for the actual context of Vietnam.

Further studies should be focused on analysis of actual status and then should propose procedures of organization management and shift modes to make R&D activities of organizations more effective and market oriented. Once the market oriented business models get established in R&D units, researchers and businessmen will have the common vision to get linked each with other. This would be a background to form alliances for sustainable cooperation and to turn the innovation really to a tool to enhance competitiveness and added values of domestic products in sustainable directions. Mechanisms of exchange and cooperation should be proposed for research activities to promote the application of Open innovation models which are expected to become early the useful tools in Vietnam./.

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