Managing Research and Development in a Global Environment through the Collaboration of Developed and Developing Economies

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Abstract

Studies have revealed that collaborative Research and Development (R&D) activities are difficult to manage and control since they involve a complex process, this paper investigates the core factors that affect collaborative R&D and identifies a value added model for the economic growth of developed and developing nations. Backing from the government and Foreign Direct Investment (FDI) policies should be encouraged to attract global R&D investment and collaboration. Role of Multi-National Enterprises (MNE’s) in Asia’s emerging economies such as China, India and Russia etc. are elaborated to further support that the management of R&D is essential for building a stable relationship. Conclusion of the paper reveals that as the developed economies enjoy the benefits of access to large market and diversification of products, the developing economies on the other hand get higher R&D investments and access to abundant resources. Developing economies learn a lot from developed economies in the process of collaboration but as the time passes by they need to develop their own innovative capabilities and move on from process innovation phase to product innovation so as to build their reputation in the global market.

Keywords: R&D; FDI; MNE; Developed Economy; Developing Economy; Innovation; Global Market.
1. Introduction
Research is the organized, efficient and logical study done to increase or review present and existing knowledge by discovering new facts. Developed economies are recognized with high level of economic growth and security as compared to developing economies. Multi National Enterprises (MNE’s) from developed economies are increasingly globalizing their R&D activities to source innovations from outside the firm, including from developing economies (Li and Kozhikode, 2009). Developing economies such as Brazil, Russia, India and China, which were termed as minor players in the global innovation phase have now appeared as majors due to their innovative capabilities in the mobile communication and electronics sector (Mathews, 2002). These economies emerged from their existing position in the global market when they joined hands with the developed nations in the process of collaboration.

Collaboration is a joint effort of multiple work groups to complete a task providing developing economies a scope of learning from the developed economies whether it is related to ideas, process, methods, or technologies. But during the course of collaboration innovation must be the sole aim of the economies because imitation never guarantees success. Innovation can be related to both the process as well as to the product. Process innovation is the reengineering through information technology which involves identifying needs, developing competences and analyzing financial benefits for the implementation of the new improved production method and its delivery. After identification, the creation and subsequent introduction of the improved goods and services into the global market leads to the concept of product innovation.

Management of R&D is the central idea behind this paper. Since R&D is initiated through collaboration it needs to be managed competently and effectively so as to make the most out of it. Now the question arises why will a developed economy join the hands with the developing economy? According to the classical theory of international trade, given by the political economist David Ricardo in 1817 every country should produce their commodities for the production of which it is most suited in terms of its natural endowments and capital in excess of its own requirement and should exchange the surplus with the imports of goods from other countries for the production of which it is not up to the mark and not appropriate at all. Thus every economy will produce and export those commodities in which they have cost advantages and import those commodities in which they have cost disadvantages.Moreover, the role of MNE’s comes here to highlight that organizations tend to undertake lower control activities initially in a foreign country (Johanson and Vahlne, 1990)and increase their resource commitment and control as they improve their understanding of the country's political, cultural, and market environments (Chang, 1995; Kogut, 1988; Kogut 1983; Li, 1995). Similarly, for the developing nations less experienced MNEs could reduce their risks and facilitate learning through cooperation and interaction. The factors which persuade both the economies to work together for the equal benefit of both have been discussed in detail in the paper later.
2. Literature Review
R&D Management in simple words is known where the innovation management meets with the technology management. It is the discipline of managing R&D process and R&D organizations. Though many dedicated models of R&D management exists like that of Arthur D. Little's Third generation R&D management, the Development funnel, the Phase gate model for improving R&D performance and increasing productivity. This paper however gives a concurrent learning Model for the developed and developing economies assuring equal benefits of collaboration to both the economies to maintain cordial relation for a long. An estimate of spending on international R&D collaboration is difficult to make. According to a report of Mckinsey & Co. funds dedicated by the advanced countries to collaborative research with developing countries appear to be about $1.4 billion per year. Japan is the largest spender in this category, with an estimated $406 million being spent on collaborative R&D based on estimates made by Japanese academic sources. The United States is the next largest spender in this category, with nearly $400 million in funds going to collaborative R&D with developing countries the majority of this spending goes to China, India, and Brazil that are the leading partner countries. This data makes it clear that companies and research centers can get numerous of instruments to fund their R&D activities. Due to the changing aspects of the information management in these situations there is a need for middle-level businesses intervention that is the MNE’s. Since they are involved in a complex process that needs to be managed and controlled(Colomo-Palacios et al, 2010).

3. Problem Identification
Many developing countries face particular challenges that make it difficult for them to stimulate and sustain overall growth. These challenges include weak organizations, increasing unemployment, and poor infrastructure, along with the lack of access to financial services and inappropriate laws and regulations. While the MNE’s might appropriate charges from their existing capabilities and source new ones in developing economies, they may cause to be vulnerable by weak intellectual property rights systems and unplanned knowledge spillovers to the firms, creating potential competitors. This current framework for investment in research and development, management of received funds are some other big issues while collaborating among the developed and developing economies. These frequently obstruct cooperation among different government interventions, organizations and individuals and the overall management of R&D suffers and hence a need of effective model to sort out this problem has to be developed.

4. Factors Influencing Collaboration
The question raised in the paper earlier finds its solution in terms of all the factors that have encouraged the collaboration of MNEs’ R&D activities, including factors at the
firm, national and international levels (Granstrand et al 1992; Granstrand et al 1993). Factors such as international agreements relating to cross border trade and investment are also important. Some prominent factors are:

4.1 Shifts in the wants of MNE’s
The knowledge networks of MNEs can help them shorten the time to market for their innovations (Cooke and Morgan, 1994) and maintaining dynamic firm capabilities that include product development skills, strategic decision-making capabilities and the ability to manage alliances (Eisenhardt and Martin, 2000). Internationalization of R&D is one way in this context (Gassmann and Han, 2004). Recent developments however emphasize the need for MNEs to look outside the boundaries of the firm and the home country for their increased knowledge networks to achieve competence.

4.2 Benefits from Developing Economies
Asian developing economies have witnessed substantial growth in the talent pools and this talent is available for less than a fourth of what it would cost in a developed economy (Ernst, 2006). Because salaries make up a significant proportion of the total of R&D, the choice of trained and experienced human resources at lower cost is a chief factor compelling MNEs to shift their R&D, even if this contributes to increased coordination costs (Li and Kozhikode, 2009).

4.3 Government Policies
According to World Investment Report (UNCTAD, 2003) many countries now wish MNE to invest in priority sectors such as infrastructure and R&D. Some developing economies, like Brazil, India and South Korea, provide worthwhile incentives like tax benefits to attract MNEs to engage in R&D. (UNCTAD, 2005) shows that state-sponsored R&D investment in China grew at an average annual rate of more than 30% between 1996 and 2005. The Chinese government has also been encouraging R&D collaboration between MNEs and local firms and government agencies. As a result, China has become a leading destination for FDI, and it plays an important role in the international strategies of many MNEs (Luo, 2001).

4.4 Advancement in Technology
Although many initial collaborations may have been initiated and inspired by a need for local production and to gain access to the market, future collaborations have advanced into developing specialized products for the market (Hobday, 1995). Since developing economies have traditionally lagged in technological innovation, MNEs were in a position to introduce innovative technologies (Bartlett and Ghoshal, 2000). The domestic market often becomes a battleground for MNEs, in developing economies with local players handicapped by their lack of technical resources, sometimes along with entry obstructions set up by the government (Mathews, 2002).
4.5 Benefits from Developed Economies
(Mathews, 2006) highlighted the benefits of collaborating with developing economies as linking with MNEs to access key resources leveraging existing resources to gain a foothold in the target industry, learning from the linkages and leverage.

5. Concurrent Learning Model for Efficient Management of R&D
After analyzing the problems and studying all the factors we are here to propose the model of concurrent learning to gain proper and equal benefit through collaboration between developed and developing economies.

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<th>DEVELOPED ECONOMY</th>
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<td>• Higher R&amp;D</td>
<td>• Growing Population</td>
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<td>• Experienced Personnel</td>
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<td>• Technical Competence</td>
<td>• Large Market</td>
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<td>• Abundant Resources</td>
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Figure 1: Concurrent learning Model for Managing R&D.

This proposed model suggests that in the process of collaboration developed economies interact with the developing ones as they get the benefit of talent pools and experienced working human resources at cheaper cost while the developing economies enjoy greater R&D investments along with skill development, capability building and experience with the proper interaction. The concurrent learning phase allows both the economies to optimally utilize the time and resources and often ensures long lasting, stable and cordial relations among the economies and it also emphasizes on the assumption of the theory of Comparative Advantage given by David Ricardo as mentioned earlier.

6. Conclusion
This study reveals that there are number of factors like access to large market, availability of cheap labors, diversification of products, higher R&D investments etc. which influences collaboration among developed and developing economies. A novel model has been proposed which suggests how these economies are able to get equal benefits through this collaboration and effectively managing the R&D activities so as to promote the collaboration. The initial learning phase for the developed economies tends to skill development which at last becomes a source of innovation and value.
addition for these economies enabling them to build up their reputation in the market. Moreover, the developed economies enjoy the benefits of cheap labors and large market. MNE’s of every economy play an important role in managing these activities since they encourage the resource commitment and control. Government policies and FDI helps these MNE’s in formulating the strategies for effectively managing R&D activities. To distinguish itself from its competitors and to gain legitimacy among its stakeholders, the developing economies needs to replace ancient, redundant and outdated resources with advanced, ecological and more competitive ones, either by total replacement or through successive progression.

References


