«ҚАЗАҚСТАН - 2050» СТРАТЕГИЯСЫ»: ҚР ЭКОНОМИКАСЫ ЖАҢҒЫРТУ МЕН ИННОВАЦИЯЛЫҚ ӨНЕРКӘСІПТЕНДІРУДІҢ БӘСЕКЕЛІК ФАКТОРЛАРЫНЫҢ ҚАЛЫПТАСУЫ МЕН ТИІМДІ ҚОЛДАНУ БОЛАШАҒЫ МЕН ТӘЖІРБИЕСІ»

«СТРАТЕГИЯ «КАЗАХСТАН - 2050»: ПРАКТИКА И ПЕРСПЕКТИВЫ ФОРМИРОВАНИЯ И ЭФФЕКТИВНОГО ИСПОЛЬЗОВАНИЯ КОНКУРЕНТНЫХ ФАКТОРОВ МОДЕРНИЗАЦИИ И ИННОВАЦИОННОЙ ИНДУСТРИАЛИЗАЦИИ ЭКОНОМИКИ РК»

«STRATEGY «KAZAKHSTAN - 2050»: PRACTICE AND PROSPECTS OF FORMATION AND EFFECTIVE USE OF COMPETITIVE FACTORS OF MODERNIZATION AND INNOVATIVE INDUSTRIALIZATION OF ECONOMY OF RK»

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Қазақстан Республикасы экономикасының индустриалды-инновациялық даму стратегиясы

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Technology y transfer is another approach to improving a country's ability to use innovative medicines strengthening the expertise the local of scientific and medical communities. Additionally, a large number of studies analyzing the successful factors that have driven innovative activities in emerging markets pointed out the collaboration among different stakeholders as a key determinant of the success.

It is not surprising that governments have been encouraging the development of strong links between industry, government and academia. A variety of measures have been used by policymakers that are either focused on developing linkages between industry and academia or between international and national industry.

Promoting collaboration between industry and academia.

Several measures are used in the countries, as shown in Table 1, to encourage the collaboration between industry and academia, with the most relevant being:

• Reforming university and public R&D systems. Efforts have been made to improve the quality and I interdisciplinary capabilities (China), while in other cases reforms were aimed at encouraging greater interaction and collaboration between universities and private industry.

• Liberalization of academic research outputs. Several countries (Brazil, India and South Korea) have adopted legislation similar to the Bayh-Dole Act. In its original form, the Act gives institutions ownership of any Intellectual property that resulted from government funding, thus allowing patents to be licensed out of commercialization. The adoption of the law in essence allows for collaboration between academia and industry.

• Creating mechanisms to accelerate commercialization of industry-developed technologies. China's new Drug creation programme requires at least one pharmaceutical industry to be involved to receive funding. India also aims to establish a platform to allow for commercialization of academic research.

• Programmes designed for public-private partnerships. The new millennium Indian technology leadership initiative is a public private partnership within the R&D space. In Brazil, Pharma Vet and a Brazilian university worked together to develop a vaccine for a parasite and was mainly funded by the government. Twenty-nine partnerships between government laboratories and foreign laboratories to produce 30 medications were formed by February 2012 [3].

Table 1. Policies applied to promote the collaboration between industry and academia.

Policies applied to promote industry and academia collaboration	
Brazil	Until the approval of the innovation law in 2004, academics were not allowed to be employed by the industry and any source of collaboration between pubic and private entities was forbidden.
China	Chin's new drug creation programme requires at least one pharmaceutical firm to be involved in order to receive funding.
India	The national innovation act of 2008 aimed to establish a platform to allow for commercialization of research. However, since the plan was not implemented, it is not clear to what extent these measures were applied.
Russia	Under Russia's current government, there has been increased emphasis on reforming the university system to infuse a responsibility for research and innovation into a system that had formerly been focused only a higher education. The Biotechnological Consortium for medicine and agriculture is a pilot public-private partnership programme that involves 30 Russian and foreign enterprises with interests in biotechnology, including medical biotechnology. There is also on online Technology Transfer Network which links offer of IP across all fields, including the life sciences, at 68 universities, institutes and centers with potential licensees or partners worldwide.
South Africa	Agencies supporting relations within industry and academia through regional programmes researching HIV-AIDS PPP are encouraged.
South Korea	THE Bayh-Dole Act was also adopted in the late 1990s to encourage professors and researchers to work with private firms. Two hundred sixty-eight incubation centres were established for industry-university collaboration across industries. The Small and Medium Business Administration also offers financial support for industry-academic R&D linkages.

Promoting collaboration between domestic and international companies.

Policies to encourage collaboration between domestic and international firms are not as widespread as policies to encourage collaboration between academia ad industries. Table 2 summarizes the measures applied to promote collaborative activities within domestic and international industry [4]. It found that:

- Both India and China take a free-market approach toward encouraging collaboration between domestic and international firms. In these countries joint ventures are common for international companies trying to enter the market. South Korea has an agency to promote collaboration between domestic and international firms, but no special incentives are offered.
- Countries that focus on building up manufacturing tends to provide incentives for developing collaborations between domestic and international industry. For example, Brazil encourages technology transfer from multinational companies by awarding them with contracts. Russia, which aims to build up manufacturing capabilities, also aims to improve the relationship between local and international companies through Pharma 2020. However, it is not clear to what extent this will result in an increase in the innovative activity.

Table 2. Policies applied to promote the collaboration between domestic and international industry.

Policies applied to promote between domestic and international industry.	
Brazil	In recent years, the government is encouraging technology transfer from multinationals. This is required if they are to supply certain pharmaceutical products to the domestic market. Preference is given for companies with manufacturing facilities in Brazil.
China	Policies tend to be focused on the whole industry. Pharmaceutical firms with manufacturing facilities in China area treated as domestic entities.
India	n/a
Russia	Pharma 2020 has centred the attention on the promotion of TT between local and international manufacturers. Pharma 2020 aims to : Encourage joint clinical tests and license transfer to Russian partners; establish joint structures of researchers and manufacturing for license acquisition and establishment of production sites on the territory of Russia; promote home production of high-tech and biotech substances; establish technology transfer centres abroad.
South Africa	Public-private partnerships are encouraged through regional programmes researching HIV-AIDS. Government gives certain advantage to domestic industry so international companies are developing links with local manufacturers. Licensing also helps to promote TT.
South Korea	The Korean Trade and investment promotion cooperation (KOTRA) was established to promote collaboration between domestic and foreign firms.

Countries are also providing education and training opportunities for students in order to grow their indigenous workforce. These efforts include programmes that send students abroad to broaden their research experience and subsequently attract them back with opportunities at universities and research institutions at home (Table 3) [5].